

## Current Contents

## Record - 1

DIALOG(R)File 440:Current Contents Search(R)  
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07714864 GENUINE ARTICLE#: VE284 NUMBER OF REFERENCES: 26  
TITLE: Cigarette smoking among vocational school students in some German large towns and rural areas - A pilot study of 27 occupations  
AUTHOR(S): Hort W (REPRINT) ; Setter C  
CORPORATE SOURCE: UNIV DUSSELDORF, INST PATHOL, MOORENSTR 5/D-40225 DUSSELDORF//GERMANY/ (REPRINT)  
PUBLICATION TYPE: JOURNAL  
PUBLICATION: MEDIZINISCHE WELT, 1996, V47, N8 (AUG), P342-345  
PUBLISHER: F K SCHATTAUER VERLAG GMBH, P O BOX 10 45 45, LENZHALDE 3, D-70040 STUTTGART, GERMANY  
ISSN: 0025-8512  
CURRENT CONTENTS JOURNAL ANNOUNCEMENT: CC CLIN, V24, N41  
LANGUAGE: German DOCUMENT TYPE: ARTICLE  
ABSTRACT: An anonymous questionnaire covering 2072 vocational school students (69.2%female, 30.8% male) from 27 different professions was held in two large cities (Dusseldorf and Essen) and two small towns situated in rural areas (Bitburg and Prum in the Eifel). It was found that the smoking behavior differs remarkably depending on the becoming professions.

Especially high numbers of smokers were found in the following groups: Female sales workers, male automotive- and industrial-mechanics and hairdressers of both sexes.

In contrast low prevalence of smoking has been observed in women becoming bank clerks, clerks, and in women educated in the fields of business and taxes. The danger of high smoking frequency was discussed taking hairdressers as an example. Such a high-risk population demands interventional programs against smoking.

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DIALOG(R)File 440:Current Contents Search(R)  
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06578385 GENUINE ARTICLE#: RJ495 NUMBER OF REFERENCES: 22  
TITLE: EVALUATION OF THE 1990 CENTERS FOR DISEASE CONTROL AND PREVENTION SMOKE-FREE POLICY  
AUTHOR(S): EMONT SL; ZAHNISR SC; MARCUS SE; TRONTELL AE; MILLS S; FRAZIER EL; WALLER MN; GIOVINO GA  
CORPORATE SOURCE: JOHNSON & JOHNSON HLTH CARE SYST INC, DIV HLTH MANAGEMENT, EPIDEMIOLOG & CHRON DIS, 410 GEORGE ST/NEW BRUNSWICK//NJ/08901 (Reprint); CTR DIS CONTROL & PREVENT, NATL CTR CHRON DIS PREVENT & HLTH PROMOT, DIV CANC PREVENT & CONTROL/ATLANTA//GA/30341; CTR DIS CONTROL & PREVENT, NATL CTR CHRON DIS PREVENT & HLTH PROMOT, EPIDEMIOLOG BRANCH/ATLANTA//GA/30341; CTR DIS CONTROL & PREVENT, NATL CTR CHRON DIS PREVENT & HLTH PROMOT, DATA MANAGEMENT SECT/ATLANTA//GA/30341; CTR DIS CONTROL & PREVENT, NATL CTR CHRON DIS PREVENT & HLTH PROMOT/ATLANTA//GA/30341; NIDR, DIV EPIDEMIOLOG & ORAL DIS

PREVENT/BETHESDA//MD/20892; NCI, INVESTIGATOR INITIATED RES  
SECT/BETHESDA//MD/20892; US HLTH CARE FINANCING ADM, RES  
OFF/BALTIMORE//MD/00000  
PUBLICATION: AMERICAN JOURNAL OF HEALTH PROMOTION, 1995, V9, N6 (JUL-AUG)  
, P456-461  
ISSN: 0890-1171  
CURRENT CONTENTS JOURNAL ANNOUNCEMENT: CC SOCS, V27, N33  
LANGUAGE: ENGLISH DOCUMENT TYPE: ARTICLE  
ABSTRACT: Purpose. To determine the prevalence of tobacco use among Centers  
for Disease Control and Prevention (CDC)/Agency for Toxic Substances  
and Disease Registry (ATSDR) employees and the effect of the smoke-free  
policy on smoking behavior and air quality at work.

Design. A stratified telephone survey of 1181 CDC/ATSDR employees  
randomly selected from employee rosters.

Setting. CDC/ATSDR work sites in Atlanta, Georgia, and other major  
CDC locations throughout the United States and Puerto Rico.

Subjects. Randomly selected employees of CDC/ATSDR1, or about 22%  
of the total CDC/ATSDR population; 98% of eligible persons selected  
agreed to participate.

Measures. Demographic and smoking history variables, attitudes  
toward and impact of the smoke-free policy on smoking behavior, and  
self-report changes in air quality were the measures used.

Results. Overall cigarette smoking prevalence was only 11.1%. One  
percent reported using chewing tobacco, 1.1% reported smoking a pipe,  
and 1.4% reported smoking cigars. Average self-reported, daily  
cigarette consumption significantly decreased after the smoking ban  
took effect. Overall, 90% of the employees supported the smoke-free  
policy, and 80% of the employees believed that smokers were complying  
with the smoke-free policy. Most employees believed that the air  
quality of work areas and nonwork areas (65% and 69%, respectively) had  
improved since the smoke-free policy was implemented.

Conclusions. These findings are consistent with previous  
evaluations of smoke-free policies and suggest that most employees are  
generally supportive of workplace smoking restrictions. Such policies  
can also have a positive impact on smoking behavior and perceived air  
quality.

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DIALOG(R)File 440:Current Contents Search(R)  
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05805083 GENUINE ARTICLE#: PJ094 NUMBER OF REFERENCES: 16  
TITLE: ADVOCACY AND GOVERNMENT ACTION FOR CANCER PREVENTION IN OLDER  
PERSONS  
AUTHOR(S): BAL DG; LLOYD J  
CORPORATE SOURCE: CALIF DEPT HLTH SERV, CANC CONTROL BRANCH, 601 N 7TH  
ST, MS  
662, POB 94234732/SACRAMENTO//CA/94234 (Reprint)  
PUBLICATION: CANCER, 1994, V74, N7 (OCT 1), P2067-2070

Doc. Code: P0622

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PM3003565427

ISSN: 0008-543X

CURRENT CONTENTS JOURNAL ANNOUNCEMENT: CC CLIN, V22, N43; CC LIFE, V37, N43

LANGUAGE: ENGLISH DOCUMENT TYPE: ARTICLE

ABSTRACT: Government action and the advocacy activities that influence it are as important a concern for cancer control as they are for any other public issue. Policy advocacy strategies have proven themselves effective in cancer prevention efforts involving tobacco use and nutrition. Much of what has been learned from this experience can be applied with great effect in advocacy efforts for other cancer control measures.

The implementation of Proposition 99, the 1988 tobacco tax initiative in California, illustrates the effectiveness of aggressive policy advocacy strategies such as provocative paid advertising, mobilization through coalitions, and community-level public relations, to bring about government action at all levels of government and in the private sector. Today, largely as a result of these activities, more than 70 of California's 471 cities have a 100% smokefree workplace and/or a 100% smokefree restaurant ordinance, and nearly 300 cities currently have ordinances that restrict smoking pollution and/or restrict youth access to cigarette vending machines. About 150 cities have ordinances that were either adopted or greatly strengthened since 1990 when the program hit the streets.

Ironically, although the primary aim of these strategies has been to reduce uptake of tobacco use by adolescents, the program's gains so far-including the reduction in adult smoking prevalence from 26% in 1988 to 20% in 1993, for an estimated savings in 1993 alone of \$386 million in direct medical costs in the state-have been the result of adult smokers quitting, especially those older than 50.

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DIALOG(R)File 440:Current Contents Search(R)

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05793364 GENUINE ARTICLE#: ND355 NUMBER OF REFERENCES: 18

TITLE: RESTRICTIVE SMOKING POLICIES IN THE WORKPLACE - EFFECTS ON SMOKING PREVALENCE AND CIGARETTE CONSUMPTION

AUTHOR(S): JEFFERY RW; KELDER SH; FORSTER JL; FRENCH SA; LANDO HA; BAXTER JE

CORPORATE SOURCE: UNIV MINNESOTA,SCH PUBL HLTH,DIV EPIDEMIOL,1300S 2ND ST,SUITE 300/MINNEAPOLIS/MN/55454 (Reprint)

PUBLICATION: PREVENTIVE MEDICINE, 1994, V23, N1 (JAN), P78-82

ISSN: 0091-7435

CURRENT CONTENTS JOURNAL ANNOUNCEMENT: CC CLIN, V22, N43

LANGUAGE: ENGLISH DOCUMENT TYPE: ARTICLE

ABSTRACT: Background. Thirty-two worksites participating in a randomized trial of worksite health promotion aimed at reducing smoking and obesity were categorized at baseline and 2 years later as having either restrictive or unrestrictive smoking policies. Between the two assessment points, 16 sites received health promotion interventions.

Results. At baseline 15 sites had restrictive policies and 17 unrestrictive policies. Smoking restrictions were associated with significantly lower smoking prevalence and higher lifetime quit rates

Doc. Code: P0622

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among ever smokers. They also were associated with more recent quit attempts and lower daily cigarette consumption, although these effects were not significant. Between baseline and follow-up, 9 of the 17 worksites that had few smoking restrictions at baseline became restrictive. Although neither baseline smoking policies nor changes in smoking policy predicted change in smoking prevalence or in the frequency of quit attempts, smokers in sites changing from unrestrictive to restrictive policies reported a significant reduction in daily cigarette consumption.

**Conclusions.** The worksite health promotion program was successful in reducing smoking prevalence in intervention sites compared to controls. However, the existence of restrictive smoking policies neither helped nor hindered these intervention efforts. The present data are believed to support the idea that restrictive smoking policies have beneficial effects on the smoking habits of employees, but that the magnitude of this effect is modest. (C) 1994 Academic Press, Inc.

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DIALOG(R)File 440:Current Contents Search(R)  
(c) 1999 Inst for Sci Info. All rts. reserv.

05351820 GENUINE ARTICLE#: NG964 NUMBER OF REFERENCES: 21  
TITLE: SMOKING REGULATIONS AT THE WORKPLACE AND SMOKING BEHAVIOR - A  
STUDY  
FROM SOUTHERN GERMANY  
AUTHOR(S): BRENNER H; FLEISCHLE B  
CORPORATE SOURCE: UNIV ULM,EPIDEMIOLOG UNIT,HOCHSTR 8/D-89081 ULM//GERMANY/  
(Reprint)  
PUBLICATION: PREVENTIVE MEDICINE, 1994, V23, N2 (MAR), P230-234  
ISSN: 0091-7435  
CURRENT CONTENTS JOURNAL ANNOUNCEMENT: CC CLIN, V22, N21  
LANGUAGE: ENGLISH DOCUMENT TYPE: ARTICLE  
ABSTRACT: Background. The relationship between smoking regulations at the  
workplace and smoking habits was assessed among public-sector employees  
in southern Germany.

**Methods.** A cross-sectional study was conducted among 931 employees who were working under three different, long-existing types of smoking regulations: (a) no restrictions at all, (b) a requirement that employees make their own agreement, and (c) a general prohibition of smoking.

**Results.** Smoking prevalence was lower among employees at workplaces with smoking restrictions (24.8 and 29.2% for workplaces with the agreement policy and the general smoking ban, respectively) than among other employees (31.4%), but these differences were not statistically significant. Large and highly statistically significant ( $P < 0.001$ ) differences were found, however, in the average numbers of cigarettes smoked per day by active smokers. The mean number ranged from 20.5 in smokers without worksite restrictions to 14.1 and 13.2 in smokers working under the agreement policy and the general smoking ban, respectively. These differences persisted after multivariable control for potential confounders.

Conclusion. Despite inherent limitations of the cross-sectional study design, our results suggest that regulation of smoking at the workplace may help active smokers substantially reduce their daily cigarette consumption. Such regulations might therefore be very effective public health measures. (C) 1994 Academic Press, Inc.

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DIALOG(R)File 440:Current Contents Search(R)  
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05294086 GENUINE ARTICLE#: NC851 NUMBER OF REFERENCES: 9  
TITLE: CHANGES IN SMOKING BEHAVIOR AND BODY WEIGHT AFTER IMPLEMENTATION OF

A NO-SMOKING POLICY IN THE WORKPLACE

AUTHOR(S): HUDZINSKI LG; SIROIS PA

CORPORATE SOURCE: ALTON OCHSNER MED FDN & OCHSNER CLIN,DEPT PSYCHIAT,1514

JEFFERSON HIGHWAY/NEW ORLEANS/LA/70121 (Reprint)

PUBLICATION: SOUTHERN MEDICAL JOURNAL, 1994, V87, N3 (MAR), P322-327

ISSN: 0038-4348

CURRENT CONTENTS JOURNAL ANNOUNCEMENT: CC CLIN, V22, N18

LANGUAGE: ENGLISH DOCUMENT TYPE: ARTICLE

ABSTRACT: There is little information on the long-term consequences for employees when no-smoking policies are established in the workplace. Our study was designed to assess changes in employee health and smoking behavior. Of the original 60 subjects, 40 employees (18 smokers, 22 nonsmokers) completed this study, which was conducted in a major medical institution. Nonsmokers were recruited as part of the study to determine whether they showed evidence of workplace carbon monoxide associated with passive smoke, potentially inhaled at the work site. Baseline measurements of smoking frequency, carbon monoxide, and weight were obtained during the month preceding the smoking restrictions and at 6 and 18 months afterward. Smokers made significant reductions in daily smoking during the first 6 months but gradually returned to prepolicy levels over the following year. Smokers, in particular, showed increases in weight. Smokers gained 4.93 lb after 18 months, whereas nonsmokers gained 2.25 lb in the same period. Nonsmoker employees showed no evidence of workplace carbon monoxide exposure associated with passive smoke. We discuss the implications of the findings for no-smoking policies in the workplace.

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DIALOG(R)File 440:Current Contents Search(R)  
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05212273 GENUINE ARTICLE#: MW864 NUMBER OF REFERENCES: 12  
TITLE: PUBLIC ATTITUDES ABOUT CIGARETTE SMOKING - RESULTS FROM THE 1990

SMOKING ACTIVITY VOLUNTEER EXECUTED SURVEY

AUTHOR(S): MARCUS SE; EMONT SL; CORCORAN RD; GIOVINO GA; PIERCE JP; WALLER MN; DAVIS RM

CORPORATE SOURCE: NIDR,ANAL STUDIES & HLTH ASSESSMENT

BRANCH,5333WESTBARD

AVE,ROOM 537/BETHESDA/MD/20892 (Reprint); CTR DIS CONTROL,NATL CTR

CHRON DIS PREVENT & HLTH PROMOT,OFF SMOKING & HLTH/ATLANTA/GA/30333

Doc. Code: P0622

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PM3003565430

PUBLICATION: PUBLIC HEALTH REPORTS, 1994, V109, N1 (JAN-FEB), P125-134

ISSN: 0033-3549

CURRENT CONTENTS JOURNAL ANNOUNCEMENT: CC SOCS, V26, N13; CC CLIN, V22, N13

LANGUAGE: ENGLISH DOCUMENT TYPE: ARTICLE

**ABSTRACT:** The 1990 Smoking Activity Volunteer Executed Survey collected information on a wide range of policy-relevant issues concerning public attitudes about cigarette smoking. These issues include cigarette taxes advertising restrictions, minors' access to tobacco products, school-based prevention, and exposure to environmental tobacco smoke in workplaces and public areas.

Survey data were collected during the spring and summer months of 1990 from random samples of adults from Arizona, Michigan, Pennsylvania, and Texas. Telephone interviews were conducted by trained American Cancer Society volunteers using standardized questionnaires. Cluster sampling techniques, interviewer training and supervision, and data collection procedures were designed in conformity with the methodology of the Behavioral Risk Factor Surveillance System of the Centers for Disease Control and Prevention.

Smoking prevalence ranged from a low of approximately 20 percent in Texas to a high of 31 percent in Michigan. Between 60 and 69 percent of the respondents in the four States, including between 44 and 71 percent of current smokers, believe tobacco should be classified as a drug. Around 65 percent of the respondents would support an extra tax on tobacco to finance public campaigns against smoking, and between 61 percent and 69 percent favor banning cigarette advertising in the print media and on billboards. More than 82 percent of the respondents believe that stronger laws should be enacted to prevent the sale of tobacco products to minors, and more than 86 percent believe that existing laws should be better enforced. Current smokers were only slightly less likely than were former and never smokers to indicate support of policy changes to prevent minors' access to tobacco products, the two groups had somewhat more disagreement in the amount of support for the other smoking control policies.

Finally, although between 62 and 88 percent of working respondents reported the presence of smoking restrictions at their workplace, between 26 and 48 percent still reported being bothered by smoking at work.

These study findings suggest that existing smoking control policies are not restrictive enough or are inadequately enforced. The study documents strong public concern in the four states about the inadequacy of current policies and support for the enactment of stronger legislation to control smoking behavior.

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DIALOG(R)File 440:Current Contents Search(R)  
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04668934 GENUINE ARTICLE#: LJ892 NUMBER OF REFERENCES: 31  
TITLE: LOWER LEVELS OF CIGARETTE CONSUMPTION FOUND IN SMOKE-FREE  
WORKPLACES

Doc. Code: P0622

7

PM3003565431

## IN CALIFORNIA

AUTHOR(S): WOODRUFF TJ; ROSBROOK B; PIERCE J; GLANTZ SA (Reprint)  
 CORPORATE SOURCE: UNIV CALIF SAN FRANCISCO,SCH MED,INST HLTH POLICY  
 STUDIES,BOX 0124/SAN FRANCISCO//CA/94143 (Reprint); UNIV CALIF SAN  
 FRANCISCO,SCH MED,INST HLTH POLICY STUDIES,BOX 0124/SAN  
 FRANCISCO//CA/94143; UNIV CALIF SAN DIEGO,CTR CANC,CTR POPULAT STUDIES  
 CANC PREVENT/LA JOLLA//CA/92093  
 PUBLICATION: ARCHIVES OF INTERNAL MEDICINE, 1993, V153, N12 (JUN 28), P  
 1485-1493  
 ISSN: 0003-9926  
 CURRENT CONTENTS JOURNAL ANNOUNCEMENT: CC CLIN, V21, N30; CC LIFE, V36, N30  
 LANGUAGE: ENGLISH DOCUMENT TYPE: ARTICLE  
 ABSTRACT: Objective: We examined the relationship between workplace smoking  
 policies and smoking prevalence and cigarette consumption.

Methods: California residents were questioned by telephone with the  
 1990 California Tobacco Survey. All respondents (11 704) above age 18  
 years who were employed indoors were used. Respondents were asked about  
 smoking status, workplace smoking policy, desire to quit, and smoking  
 history. Logistic regression was used to determine the relationship of  
 workplace smoking policy to smoking status, accounting for demographic  
 variables.

Results: Prevalence of regular smokers was significantly lower in  
 smoke-free workplaces than in those with no restrictions (13.7% vs  
 20.6%,  $P<.001$ ). Continuing regular smokers in smoke-free workplaces  
 smoked fewer cigarettes than those in workplaces with no restrictions  
 (296 vs 341 packs per year,  $P<.001$ ). More comprehensive smoking  
 policies were associated with smokers more likely to contemplate  
 quitting ( $P=.014$ ).

Conclusions: Employees in smoke-free workplaces have a lower  
 smoking prevalence and, among continuing smokers, lower cigarette  
 consumption than individuals working where smoking is permitted. We  
 estimate cigarette consumption among employees indoors is 21% below  
 that if there were no smoking restrictions in California workplaces.  
 Furthermore, if all California workplaces were smoke-free, cigarette  
 consumption among employees would be 41% below that if there were no  
 workplace smoking restrictions, approximately a \$406 million annual  
 loss in sales to the tobacco industry. This study supports the  
 hypothesis that smoke-free workplace policies are an effective public  
 health measure for decreasing smoking prevalence and cigarette  
 consumption among continuing smokers.

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DIALOG(R)File 440:Current Contents Search(R)  
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03918954 GENUINE ARTICLE#: JH959 NUMBER OF REFERENCES: 0  
 (NO REFS KEYED)

TITLE: SMOKING PREVALENCE AMONG HOSPITAL STAFF AND FUTURE TEACHERS  
 AUTHOR(S): ALLAZ AF; SECHAUD L; ROUGEMONT A  
 CORPORATE SOURCE: INST UNIV PSYCHIAT GENEVE,DIV MED PSYCHOSOMAT  
 &PSYCHOSOCIALE,PSYCHIAT CLIN 2,51 BD CLUSE/CH-1205 GENEVA//SWITZERLAND/  
 (Reprint)

Doc. Code: P0622

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PM3003565432

PUBLICATION: SOZIAL-UND PRAVENTIVMEDIZIN, 1992, V37, N3, P131-135  
 CURRENT CONTENTS JOURNAL ANNOUNCEMENT: CC CLIN, V20, N37  
 LANGUAGE: FRENCH DOCUMENT TYPE: ARTICLE

ABSTRACT: We have surveyed the prevalence of smoking habits and the opinions about it's regulation among 192 students in two different schools (a teachers' and a nursing school) and among 320 employees of the University Hospital of Geneva. Smoking prevalence varies depending on the profession and sex, and remains high considering the level of education of the surveyed population. Among the future school teachers 23% are smokers. In the hospital, the smoking prevalence is 25% in the health professionals and 32% in the administrative and technical staff. As many as 46% of the future nurses are smoking. Obviously much still needs to be done in order to decrease the number of smokers among the health professionals. The majority of the employees questioned, both smokers and nonsmokers, were in favor of regulating smoking in the workplace. 91% of the hospital staff, and 86% of the smokers among them, favored a smoke free hospital policy. Restriction of tobacco use in the workplace should be implemented particularly when it is the wish of a majority of employees.

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DIALOG(R)File 440:Current Contents Search(R)  
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03296526 GENUINE ARTICLE#: GT654 NUMBER OF REFERENCES: 22  
 TITLE: NO-SMOKING LAWS IN THE UNITED-STATES - AN ANALYSIS OF STATE AND CITY ACTIONS TO LIMIT SMOKING IN PUBLIC PLACES AND WORKPLACES  
 AUTHOR(S): RIGOTTI NA; PASHOS CL  
 CORPORATE SOURCE: HARVARD UNIV,MASSACHUSETTS GEN HOSP,SCH MED,GENINTERNAL  
 MED UNIT,FRUIT ST/BOSTON//MA/02114 (Reprint); HARVARD UNIV,JOHN F KENNEDY SCH GOVT,INST STUDYSMOKING BEHAV & POLICY/CAMBRIDGE//MA/02138  
 PUBLICATION: JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 1991, V266, N22 (DEC 11), P3162-3167

CURRENT CONTENTS JOURNAL ANNOUNCEMENT: CC CLIN, V20, N01; CC LIFE, V35, N01  
 LANGUAGE: ENGLISH DOCUMENT TYPE: ARTICLE

ABSTRACT: Objective. - To assess the prevalence, content, and growth of state and city laws restricting smoking in public places and workplaces in the United States and to identify factors associated with their passage.

Design. - A mailed survey of city clerks in US cities with a population of 25 000 or greater (N = 980) and review of existing data sources confirmed the status of smoking restrictions in 902 (92%) of the cities in the sample. State laws were identified by contacting each state's Legislative Reference Bureau (100% response). Content of laws was coded using previously developed categories.

Main Outcome Measures. - Prevalence, comprehensiveness, and cumulative incidence of no-smoking laws in states and in cities with a population of 25 000 or greater.

Results. - By July 1989, 44 states and 500 (51%) of the cities in our sample had adopted some smoking restriction, but content varied widely. While 42% of cities limited smoking in government buildings,



27% in public places, 24% in restaurants, and 18% in private workplaces, only 17% of cities and 20% of states had comprehensive laws restricting smoking in all four of these sites. The number of city no-smoking laws increased tenfold from 1980 to 1989. City no-smoking laws were independently associated with population size, geography, state tobacco production, and adult smoking prevalence. Laws were more common in larger cities, Western cities, and states with fewer adult smokers. Laws were less common in tobacco-producing states and in the South.

**Conclusions.** - No-smoking laws are more widespread than previously appreciated, especially at the local level, reflecting a rapid pace of city government action in the 1980s. Nonetheless, comprehensive laws, which are most likely to provide meaningful protection from environmental tobacco smoke exposure, remain uncommon and represent a major gap in smoking control policy. Laws are most needed in smaller and non-Western cities and in states that produce tobacco and have a higher proportion of smokers.

## SciSearch

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DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
(c) 1999 Inst for Sci Info. All rts. reserv.

02373735 Genuine Article#: KX085 Number of References: 54

Title: THE HEALTHY WORKER PROJECT - A WORK-SITE INTERVENTION FOR WEIGHT CONTROL AND SMOKING CESSATION

Author(s): JEFFERY RW; FORSTER JL; FRENCH SA; KELDER SH; LANDO HA; MCGOVERN PG; JACOBS DR; BAXTER JE

Corporate Source: UNIV MINNESOTA,SCH PUBL HLTH,DIV EPIDEMIOL,1300S 2ND ST,SUITE 300/MINNEAPOLIS/MN/55454

Journal: AMERICAN JOURNAL OF PUBLIC HEALTH, 1993, V83, N3 (MAR), P395-401

ISSN: 0090-0036

Language: ENGLISH Document Type: ARTICLE

Abstract: Objectives. A randomized trial was conducted to evaluate the effectiveness of a work-site health promotion program in reducing obesity and the prevalence of cigarette smoking.

Methods. Thirty-two work sites were randomized to treatment or no treatment for 2 years. Treatment consisted of health education classes combined with a payroll-based incentive system. Evaluation was based on cohort and cross-sectional surveys.

Results. Of 10 000 total employees in treatment work sites, 2041 and 270 participated in weight control and smoking cessation programs, respectively. Weight losses averaged 4.8 lbs, and 43% of smoking participants quit. Net 2-year reductions in smoking prevalence in treatment vs control work sites were 4.0% and 2.1% in cross-sectional and cohort surveys, respectively. No treatment effect was found for weight. Treatment effects for smoking prevalence and weight were both positively correlated with participation rates in the intervention programs ( $r = .46$  for smoking and  $r = .55$  for weight).

Conclusions. This work-site health promotion program was effective in reducing smoking prevalence at a cost that is believed to make the investment worthwhile.

## Medline

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DIALOG(R)File 154:MEDLINE(R)

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08660763 96160612

Cigarette smoking and health. American Thoracic Society.

Am J Respir Crit Care Med (UNITED STATES) Feb 1996, 153 (2) p861-5,

ISSN 1073-449X Journal Code: BZS

Languages: ENGLISH

Document type: JOURNAL ARTICLE

Cigarette smoking remains the primary cause of preventable death and morbidity in the United States. Smoking causes lung cancer, COPD, and CHD and contributes significantly to mortality from other conditions such as stroke. Maternal smoking during pregnancy causes low birthweight and perinatal mortality, and it may have lasting impact on the child's physical and cognitive growth. Passive exposure to ETS causes lung cancer and poses particular danger to the respiratory health of young children. Smoking cessation strategies are important, but they should be supplemented by community and policy-level interventions. Workplace or community smoking bans, statewide taxes on tobacco, and antismoking media campaigns may be effective adjuncts to individual cessation strategies. These strategies may be an even more important disincentive to smoking initiation. The expanding horizon of health consequences of smoking and its costs to American society should again challenge public health agencies to develop and implement effective strategies to prevent smoking acquisition by young people. These health effects should also motivate health professionals in other countries where smoking prevalence is increasing, rather than decreasing, to initiate more effective efforts to reverse this trend and minimize the excess morbidity and death that accompany this dangerous habit.

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DIALOG(R)File 155:MEDLINE(R)

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07179367 93033760

[Prevalence of smoking in hospital personnel and future teachers]

Prevalence du tabagisme chez le personnel hospitalier et les futurs enseignants.

Allaz AF; Sechaud L; Rougemont A

Division de medecine psychosomatique et psychosociale, Clinique de Psychiatrie II (IUPG), Geneve.

Soz Praventivmed (SWITZERLAND) 1992, 37 (3) p131-5, ISSN 0303-8408

Journal Code: YF1

Languages: FRENCH Summary Languages: ENGLISH

Document type: JOURNAL ARTICLE English Abstract

We have surveyed the prevalence of smoking habits and the opinions about its regulation among 192 students in two different schools (a teachers' and a nursing school) and among 320 employees of the University Hospital of Geneva. Smoking prevalence varies depending on the profession and sex, and remains high considering the level of education of the surveyed population. Among the future school teachers 23% are smokers. In the hospital, the smoking prevalence is 25% in the health professionals and 32% in the

Doc. Code: P0622

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administrative and technical staff. As many as 46% of the future nurses are smoking. Obviously much still needs to be done in order to decrease the number of smokers among the health professionals. The majority of the employees questioned, both smokers and non-smokers, were in favor of regulating smoking in the workplace. 91% of the hospital staff, and 86% of the smokers among them, favored a smoke free hospital policy. Restriction of tobacco use in the workplace should be implemented particularly when it is the wish of a majority of employees.

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DIALOG(R)File 155:MEDLINE(R)

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07159770 93004331

Place of birth and ethnic status: factors associated with smoking prevalence among Canadians.

Millar WJ

Canadian Centre for Health Information, Statistics Canada.

Health Rep (CANADA) 1992, 4 (1) p7-24, ISSN 0840-6529

Journal Code: A57

Languages: ENGLISH, FRENCH

Document type: JOURNAL ARTICLE

The prevalence of smoking is lower among foreign-born (16%) than among native-born Canadians (25%). In addition, foreign-born smokers smoke fewer cigarettes a day than the native-born. Foreign-born Canadians also tend to smoke cigarettes with a lower tar yield. The differences in the smoking behaviour of foreign-born and native-born Canadians suggest that the foreign-born may be at lower risk from smoking related morbidity and mortality. National smoking rates conceal wide variations in smoking prevalence by ethnic group. The highest smoking rates in Canada are found among Canadian Aborigines. About 59% of Aboriginal Canadians smoke on a regular basis. In contrast, only 11% of Asian Canadians smoke regularly. These marked differences in smoking rates among ethnic groups are an argument for addressing the unique behaviour of each ethnic group within existing health promotion programs. Four out of ten smokers (42%) attempts to quit smoking during the course of a year. This percentage does not vary much by gender or by foreign-born/native-born status. The high percentage of smokers who attempt to quit during a year probably reflects the combined impacts of smoking prevention programs, increased taxation on cigarettes, and smoking restrictions on smoking in the workplace and in public settings.

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DIALOG(R)File 155:MEDLINE(R)

(c) format only 1999 Dialog Corporation. All rts. reserv.

06799481 92002463

Changes in smoking behaviour after a total workplace smoking ban.

Borland R; Owen N; Hocking B

Centre for Behavioural Research in Cancer, Carlton South, Vic.

Aust J Public Health (AUSTRALIA) Jun 1991, 15 (2) p130-4, ISSN

1035-7319 Journal Code: A2X

Languages: ENGLISH

Document type: JOURNAL ARTICLE

Doc. Code: P0622

13

PM3003565437

This paper reports data on changes in smoking behaviour after the introduction of a total workplace smoking ban in Telecom Australia. A sample of 1089 Telecom staff were surveyed in the months before the introduction of the ban and 620 were resurveyed six months after the ban had been implemented. A further sample of 1424 was drawn from the same parts of the organisation 18 months after implementation. Among the smokers in these samples, the bans produced a reduction in workday cigarette consumption of between three and four cigarettes a day and this reduction was maintained at 18 months. Over the two-year period from six months before the ban to 18 months after it, smoking prevalence dropped about 5 per cent, which we estimate is about twice the decline found in the general community. Workplace smoking bans can produce public health and can assist individual smokers to regulate their habit.

Record - 16

DIALOG(R)File 155:MEDLINE(R)

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06435522 90346476

Why the tobacco industry fears the passive smoking issue.

Chapman S; Borland R; Hill D; Owen N; Woodward S

Department of Community Medicine, University of Sydney, Westmead Hospital, Australia.

Int J Health Serv (UNITED STATES) 1990, 20 (3) p417-27, ISSN 0020-7314 Journal Code: GRJ

Languages: ENGLISH

Document type: JOURNAL ARTICLE

The tobacco industry has identified the passive smoking issue as the single most important problem confronting its economic future. During the 1980s, the industry has been engaged in an elaborate and expensive international campaign seeking to refute the evidence against passive smoking's effects on health and to position the issue as one essentially concerned with civil liberties and smokers' "rights." There are three main reasons for the industry's concern: first, the passive smoking issue allows a widening of the definition of smoking beyond its discussion as a personal habit, legitimizing it as a social problem; second, successful cases of litigation against employers by workers with histories of chronic exposure to environmental tobacco smoke have created an industrial climate of concern leading to workplace smoking restrictions and bans, and third, the proliferation of smoking restrictions reduces smoking opportunities and thus reduces total cigarette consumption and hence financial returns to the industry. Based on the results of a large Australian study of a workplace smoking ban, an estimated 654.88 million cigarettes with a retail value of \$A6,549 thousand would be forgone annually in Australia alone if 50 percent of white-collar worksites were to ban smoking. Finally, the passive smoking issue can be considered a Trojan horse to its less discussed effects: the reduced morbidity and mortality likely to result in smokers from the significant reductions in smoking frequency that occur with the proliferation of smoking restrictions introduced in the name of concern for the health of nonsmokers.

Record - 17

DIALOG(R)File 155:MEDLINE(R)

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05620855 90002676

Smoking in the workplace 1986: Labour Force Survey estimates.

Millar WJ; Bisch LM

Can J Public Health (CANADA) Jul-Aug 1989, 80 (4) p261-5, ISSN 0008-4263 Journal Code: CK6

Languages: ENGLISH

Document type: JOURNAL ARTICLE

A smoking supplement on the December 1986 Canadian Labour Force Survey (LFS) obtained data on smoking rates within occupational groups, the percentage of workers in occupations which permit smoking at the worksite, the proportion of workers with designated smoking areas at their place of employment, and worker attitudes towards restriction of smoking. Smoking prevalence ranges from 18% among professional workers to 42% among transportation workers. Smoking rates are also high in mining (40%), construction (39%), and other craft occupations (37%). About 53% of the working population state that smoking is permitted in their immediate work area. Proportions of workers who indicate that smoking is permitted range from 39% among professional workers to 67% among transportation workers. Managerial (66%) and construction employees (65%) are also likely to state that smoking is permitted in their work area. Only 40% of the working population report that there are designated smoking areas at their place of work. Professionals (55%) and mining workers (52%) are most likely to have designated smoking areas. Workers in outdoor (17%), construction (23%), and transportation occupations (26%) are least likely. A large percentage (81%) of the working population favour smoking restrictions. Support for restricting smoking is closely linked to smoking prevalence within an occupational group. About 65% of smokers favour restrictions. The degree of support among smokers for restrictions on smoking in the workplace suggests that many smokers desire environmental constraints on their smoking behaviour.

## Occupational Safety and Health

Record - 18

DIALOG(R)File 161:Occ.Saf.&amp; Hth.

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0172617 NIOSH-00204534

Smoking Behavior and Attitudes of Employees of a Large HMO before and after a Work Site Ban on Cigarette Smoking

Mullooly, J. P., K. L. Schuman, V. J. Stevens, R. E. Glasgow, and T. M. Vogt

Public Health Reports, Vol. 105, No. 6, pages 623-628, 7 references

November 1990 CODEN: PHRPA6

Surveys were conducted about the attitudes and behaviors towards smoking following bans on smoking at work in a health maintenance organization. Employees were evaluated before and after smoking bans went into effect. A reduction in the smoke present in the workplace was seen after the smoking ban, but the ban did not have an effect on smoking prevalence or attempts to quit smoking. The ban significantly reduced intentions to quit smoking, and did not affect the number of cigarettes smoked per day, although it did appear to reduce the number smoked during work hours. A decrease in the number of reports of being bothered by smoke at work was seen with the smoking ban, and 73% of nonsmokers and 46% of smokers agreed that there was support for the ban among employees. Most smokers reported no negative effects on work efficiency after the ban. Nonsmokers were more likely than smokers to agree that the ban would help smokers quit, second hand smoke is unhealthy, smokers can improve their health by quitting, and that health care workers should serve as models for their patients.

Record - 19

DIALOG(R)File 161:Occ.Saf.&amp; Hth.

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0169900 NIOSH-00201815

Smoking Cessation Programs in the Workplace. Review and Recommendations for Occupational Health Nurses

Strasser, P. B.

AAOHN Journal, Vol. 39, No. 9, pages 432-438, 29 references

September 1991

Workplace smoking cessation programs and the importance of smoking cessation programs were discussed. Smoking has been implicated as the major cause of premature death and disability in the United States and has been revealed to exert a synergistic effect on the risk of lung disease in certain occupational groups who smoke. Nonsmokers have become increasingly vocal in demanding a smoke free workplace. Outright banning of smoking has been regarded as the simplest and cheapest way for reducing smoking in the workplace; however, there is no clear evidence that an outright ban results in an overall decrease in smoking prevalence. Workplace programs directed at assisting workers to quit have been promoted as effective approaches. Published studies of the effectiveness of workplace cessation programs were reviewed. The seventeen studies evaluated specifically targetted smoking in the workplace, and were based on incentive schemes, smoking cessation clinics, self help materials, and minimal intervention. Most of the programs were poorly designed and the quit rates were not clearly defined

making it difficult to determine which strategies were the most effective in assisting workers to quit. The best indicator of a successful smoking cessation approach appeared to be the time of sustained abstinence, defined as a specified time period during which no cigarettes were smoked. A minimum abstinence time of 12 months appeared to be the best marker of successful smoking cessation. Only four studies reported using sustained abstinence rates of 12 months as the outcome. The role of the occupational health nurse in workplace smoking cessation programs was discussed. The occupational health nurse can help plan smoking cessation programs, assist smokers who are ready to set a firm quit date, help create a supportive environment for workers who want to quit or cut down, evaluate programs that have been successful, and continue to assist smokers who have been unsuccessful in quitting.

Record - 20

DIALOG(R)File 161:Occ.Saf.& Hth.  
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0159179 NIOSH-00191130

Smoking Habits and Smoking Cessation among North Carolina Nurses  
Swenson, I. E.

Women and Health, Vol. 15, No. 2, pages 29-48, 24 references

1989 CODEN: WOHEDI

The smoking habits and factors influencing smoking cessation were reevaluated in nurses. A questionnaire eliciting information on smoking status, situations influencing smoking, and attitudes was administered to a 1 percent random sample of all nurses registered in North Carolina. A total of 171 (51 percent) responded; these individuals were found to represent statewide employment and demographic characteristics. Compared to a similar survey performed 6 years prior, smoking prevalence decreased from 32 to 19 percent; the percentage who successfully quit smoking increased from 31 to 57 percent. Former and current smokers were influenced by family and friends in adopting the habit, while never smokers who attempted smoking but did not become smokers were influenced by curiosity in their attempt, and by taste in not adopting the habit. Current smokers were less concerned about health consequences than former or never smokers. Parental sanctions were of minor importance in influencing the start of smoking. Social gatherings, stress, and boredom were identified as situations encouraging smoking. The most frequently identified reason for reducing or stopping smoking was adverse health consequence, and encouragement from family and friends was the most important external motivational factor. Of those who currently smoked, 53 percent had attempted to quit at least three times. Current smokers did not agree that nurses should not smoke in situations where their professional status could be identified, although they, with former and never smokers, agreed with the importance of role modeling for patients. Former and never smokers agreed that smoking should be restricted in public. All three groups actively encouraged patients and family not to smoke. The author concludes that smoking cessation programs in the clinical workplace may be valuable, and suggests that such programs must address relapse prevention.

Record - 21

DIALOG(R)File 161:Occ.Saf.& Hth.  
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0146226 NIOSH-00183399

## Evaluation of the Impact of Smoking Restrictions in a Government Work Setting

Millar, W. J.

Canadian Journal of Public Health, Vol. 79, No. 5, pages 379-382, 13

## references

September 1988 CODEN: CJPEA4

A study was made of the impact of a new smoking policy banning smoking in all areas of the workplace except specially designated areas, for Health and Welfare employees in the National Capital Region, Ontario, Canada. A survey taken prior to program implementation addressed prevalence of smoking, attitudes and opinions about smoking in the workplace, and suggestions for a fair and effective smoking policy. A followup survey conducted 13 months after policy implementation addressed smoking prevalence, attempts to quit, utilization of smoking cessation courses, and attitudes toward efficacy of the new policy. The population comprised 4200 workers, and response rates were 62 and 53 percent for the first and second surveys, respectively. Employees registering for either of two smoking cessation programs were contacted by telephone at 6 weeks, 6 months, and 1 year. Significant reductions were found in indicators of smoking prevalence and smoking related problems at followup. Prevalence decreased from 29 to 24 percent, daily number of cigarettes smoked from 19.9 to 17.9, and daily number smoked at work from 11.6 to 8.2. Decreases were noted in number of workers reporting being bothered by smoke in all work settings except cafeterias (designated areas), where the percentage increased. Mean respirable particulate levels in air of four selected sites tested were significantly reduced at followup. Although 60 percent of smokers initially indicated they would quit or cut down, followup showed that 46 percent had tried to quit, 20 percent had quit, 7 percent had quit for at least 6 months, and 3 percent had quit for at least 1 year. Continuous quit rates of smoking cessation registrants were 12.6, 4.0, and 3.5 percent at 6 weeks, 6 months, and 1 year, respectively. The author concludes that the data indicate a reduction in employee exposure to smoke and that designated areas should separate smokers and nonsmokers and should be appropriately ventilated.

## Trade &amp; Industry Database

Record - 22

DIALOG(R)File 148:Trade & Industry Database  
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09652250 SUPPLIER NUMBER: 18933452 (THIS IS THE FULL TEXT)  
Dilution ventilation to accommodate smoking: a case study.  
Sterling, Elia; Collett, Chris; Ross, James A.  
Heating, Piping, Air Conditioning, v68, n11, p81(5)  
Nov, 1996

## TEXT:

"Real world" exposure data are presented for buildings that use dilution ventilation to minimize nonsmoker exposure to environmental tobacco smoke

The principal consensus standard on ventilation to control indoor air quality in the United States is ASHRAE Standard 62-1989, Ventilation for Acceptable Indoor Air Quality.(1) Table 2 of this standard prescribes outside air ventilation requirements to maintain acceptable air quality in a variety of commercial and institutional facilities. A footnote to this table states that the ventilation rates were "chosen to control carbon (TABULAR DATA FOR TABLE 1 OMITTED) dioxide and other contaminants with an adequate margin of safety and to account for health variations among people, varied activity levels, and a moderate amount of smoking."

The research reported here was designed to assess the effectiveness of the dilution ventilation provisions in ASHRAE Standard 62-1989 in controlling environmental tobacco smoke (ETS) in the office workplace. Data were gathered through three interrelated phases:

- \* Assessment of HVAC system performance.
- \* Personal exposure monitoring of ETS-related constituents.
- \* Fixed location monitoring. The two buildings studied were adjacent

within a large multi-building facility in Richmond, Va. Staff working in these two office buildings performed similar job functions, typical of the North American nonindustrial workplace.

## System performance assessment

Total building HVAC assessment. The assessment of the HVAC systems included the collection of descriptive and quantitative information. The design and operational configurations of the HVAC system were determined from review of mechanical engineering plans, inspection of HVAC system components, and air flow measurements taken using a standardized duct traverse method with an electronic micromanometer fitted with a pitot tube attachment.

Fixed monitoring location HVAC assessment. The total volume of air supplied to each of four fixed sites in each building was determined by air flow measurements taken at the ceiling diffusers using an electronic micromanometer. The air flow measurements determined the volume of total air (outside and return) supplied to the fixed monitoring site. The volume of outside air supplied from the diffuser was then calculated from the proportion of outside air determined from the measurements taken at the main air handling unit (AHU).

To determine the outside air ventilation rate, one must know the ventilation effectiveness. While the term ventilation effectiveness has been variously defined by different researchers,(2) it is used here to focus on distribution of ventilation air from the central AHUs and the

mixing of ventilation air within the occupied space. No standardized method exists to determine ventilation effectiveness objectively. Therefore, a ventilation effectiveness factor was subjectively estimated through direct observation using smoke pencils and the judgment of the engineers who conducted the HVAC assessment.

In addition to the air flow measurements, continuous monitors for carbon dioxide ( $\text{CO}_2$ ), temperature, and relative humidity were installed at each indoor site and at the outside air intakes.

**Personal exposure monitoring.** Using a random sampling procedure, we selected 13 nonsmoking subjects in Building 1 and 12 subjects in Building 2 to participate in the personal exposure assessment. The personal exposure monitoring was performed on April 13 and 14, 1994.

ETS consists of both vapor- and particle-phase components.(3, 4) Total respirable suspended particles (RSPs) were measured as the tracer of particle-phase ETS exposure, and nicotine was used as an indicator of exposure to vapor-phase ETS. Both have been widely used as indicators of ETS exposure.(5)

RSPs were determined gravimetrically in accordance with ASTM Standard D4532-92, Standard Test Method for Respirable Dust in Workplace Atmospheres,(6) and nicotine concentrations were determined in accordance with ASTM Standard D5075-90, Standard Test Method for Nicotine in Indoor Air.(7) Sampling apparatus, housed in standard laboratory coats, was attached to each subject for one working day. The sampling equipment consisted of two air pumps, tubing, and sample collection media, which were attached to the lapels of the coats, adjacent to the subjects' breathing zone.

Each subject was required to maintain an activity log for the duration of the sampling period, which divided the work day into 30-min segments. For each segment, the subjects indicated their location in the building, described their work activities, and recorded the number of cigarettes they were aware of being smoked in their proximity - i.e., within 20 ft. From this information, the reported number of cigarettes per hour were computed.

**Fixed location monitoring.** In both study buildings, the same tracers of ETS exposure were monitored at the four fixed monitoring locations, which were selected to include various workplace configurations, areas of the buildings served by different AHUs, and sites in proximity to one or more of the personal monitoring subjects. At each indoor site, a customized briefcase containing air pumps and the sample collection media was installed at the beginning of the work day and remained there for approximately 8 hr. The sampling and analytical procedures used were identical to those for the personal exposure monitoring.

#### Results for Building 1

Building 1 is a 30-yr-old, two-story office structure with a gross floor area of 21,000 sq ft. Windows do not open, and smoking is permitted without restriction. Both (TABULAR DATA FOR TABLE 2 OMITTED) floors are served by a single HVAC system - a constant-volume, dual-duct system with a series of mixing boxes. The HVAC system includes single-stage filtration with synthetic bag filters at the main AHU with an estimated filtration effectiveness of 40 percent.

Table 1 presents the results of the HVAC system performance assessment for Building 1. The upper part of the table presents the air flows for the total building determined at the main AHU, and the lower portion shows the measured volumes of ventilation air supplied to each fixed location monitoring site, identified as A through D.

A total volume of 19,834 cfm of ventilation air was supplied to Building 1, of which 4470 cfm was outside air, representing 29.1 percent of

the total air supply. The air flows were substantially below the design air flow of 30,185 cfm. To assess the performance of the HVAC system with respect to ASHRAE 62-1989, one must first divide the total volume of outside air delivered to the building by the design occupancy to determine the outside air ventilation rate per occupant and then correct for ventilation effectiveness.

Observations and smoke pencil testing indicated duct leakage and supply air stratification in the occupied space. Therefore, ventilation effectiveness was assessed at 60 percent. Given this estimate and an estimated design occupancy of 150 persons, the outside air ventilation rate for Building 1 was 17.9 cfm per person. This result shows that the HVAC systems were operating nominally in accordance with the ventilation requirements of ASHRAE 62-1989.

The results of the local ventilation performance assessments at the fixed location monitoring sites in Building 1 show that all four were being supplied with volumes of outside air in accordance with or slightly below ASHRAE 62-1989. Based on design occupancy, the calculated local ventilation rates ranged from 19.2 to 29.4 cfm per occupant.

The continuous monitoring of C(O.sub.2), temperature, and relative humidity at the four fixed monitoring sites and at the outdoor air intakes indicated that the HVAC systems serving Building 1 were providing ventilation and thermal comfort conditions in accordance with ASHRAE standards.(8)

Table 2 presents the results from the personal exposureZ and fixed location monitoring conducted in Building 1. The upper portion of the table shows summary statistics (mean, median, and range) for the personal exposure monitoring for each of the two days of monitoring and both days combined. The lower part of the table summarizes the results from the fixed location monitoring. In calculating the mean values, we reported data points less than the detection limit as the detection limit. Therefore, the mean may provide a slight overestimation of the true mean in those cases where one or more data points were reported as less than the detection limit.

Total RSP concentrations from the personal exposure monitoring of the 13 nonsmoking subjects ranged from (less than)12.5 to 47.9 ((micro)gram)/(m.sup.3) (mean = 23.6 ((micro)gram)/(m.sup.3) and median = 22.8 ((micro)gram)/(m.sup.3)). Nicotine concentrations ranged from 0.3 to 4.7 ((micro)gram)/(m.sup.3) (mean = 2.0 ((micro)gram)/(m.sup.3) and median = 1.6 ((micro)gram)/(m.sup.3)).

Total RSPs varied substantially among the four fixed monitoring locations, ranging from (less than)12.5 to 67.4 ((micro)gram)/(m.sup.3) (mean = 29.2 ((micro)gram)/(m.sup.3)). Nicotine concentrations were similar at all locations with a mean level of 2.7 ((micro)gram)/(m.sup.3) and a range of 1.9 to 4.4 ((micro)gram)/(m.sup.3).

An estimate of the prevalence and frequency of smoking can be (TABULAR DATA FOR TABLE 3 OMITTED) determined from the subject activity logs and the original selection procedures for the subjects. From the activity logs, the mean reported smoking frequency was 1.4 cigarettes per hr, ranging from 0 to 5 cigarettes per hr. From the telephone survey of staff, the proportion of smokers in Building 1 was estimated at 22 percent. These figures are slightly higher than the 1992 U.S. national average smoking rate in office workplaces of 1.21 cigarettes per hr and 20.2 percent smokers, reported in the National Health Interview Survey.(9)

#### Results for Building 2

Building 2 is a 15-yr-old, three-level office structure with a gross floor area of 63,000 sq ft. Windows do not open, and smoking is permitted

without restriction.

Building 2 is served by two variable air volume (VAV) systems with similar design configurations. One VAV system (AHU 1) serves the basement and first floor. The second (AHU 2) serves the second floor. Both are equipped with two stages of filtration. The first stage is low-efficiency (20 to 30 percent) bag filters while the second is an electrostatic precipitation system.

Table 3 presents the results from the HVAC performance assessment. The upper part of the table shows the air flows delivered by AHUs 1 and 2. For both, seven sets of replicate measurements were taken over the two-day monitoring period. For each replicate set, the total air, return air, and outside air measurements were all conducted at the same time, and an outside air percentage was calculated for each set.

For AHU 1, the total air supply (outside air plus return air) ranged from 25,132 to 27,666 cfm, with the proportion of outside air as a percentage of the total supply varying from 23.6 to 37.1 percent. The volumes of outside air supplied by AHU 1 to the basement and first floors varied between 5932 and 10,274 cfm. The design maximum total air flow for AHU 1 was 38,550 cfm.

Observation and smoke pencil analysis indicated minimal duct leakage but some stratification of the ventilation air in the occupied space. A ventilation effectiveness factor of 80 percent was estimated. Given this estimate and a design occupancy for the floors served by AHU 1 of 231, outside air ventilation rates were similar on both days of measurement, ranging from 21.0 to 35.6 cfm per occupant on April 13 and from 20.6 to 35.7 cfm per occupant on April 14.

Six sets of replicate measurements were collected for AHU 2 over the same period. The total air supply distributed by AHU 2 ranged from 12,482 to 16,037 cfm, with the total volume of outside air ranging from 1416 to 5830 cfm. Higher volumes of outside air were (TABULAR DATA FOR TABLE 4 OMITTED) measured on April 13. Plan analysis showed a design maximum air flow for AHU 2 of 24,615 cfm. with a design occupancy of 146 and estimated ventilation effectiveness of 80 percent, the calculated outside air ventilation rates supplied by AHU 2 varied from 11.1 to 31.7 cfm per occupant.

The results indicate that AHU 2 was providing outside air ventilation rates below the outside air requirement of 20 cfm per occupant for office space on April 14. The differences in the measured outdoor air intake rates between the two dates were caused by pressure drops across the intake path. As the total air volume in a VAV system varies with the cooling load on the building, the static pressure in the mixed air plenum varies. Such variation has been observed in other buildings equipped with VAV systems.(10)

The continuous monitoring of C(O.sub.2), temperature, and relative humidity indicated acceptable ventilation and thermal comfort conditions.

Table 4 summarizes the results from the personal exposure and fixed location monitoring in Building 2. The upper portion of the table shows summary data for the personal monitoring, and the lower portion provides summary descriptive statistics for fixed location monitoring.

Total RSP concentrations from the personal exposure monitoring of the 12 nonsmoking subjects over the two days ranged from 16.6 to 49.6 ((micro)gram)/(m.sup.3) (mean = 35 ((micro)gram)/(m.sup.3) and median = 35.3 ((micro)gram)/(m.sup.3)). Nicotine concentrations for the subjects were consistent over the monitoring period, ranging from 1.1 to 2.3 ((micro)gram)/(m.sup.3) (mean = 1.8 ((micro)gram)/(m.sup.3) and median = 1.7 ((micro)gram)/(m.sup.3)).

RSP levels at the four monitoring locations ranged from (less than) 12.5 to 34.7 ((micro)gram)/(m.sup.3) (mean = 21.5 ((micro)gram)/(m.sup.3) and median = 20 ((micro)gram)/(m.sup.3)). Outdoor RSP levels ranged from 14.4 to 22.3 ((micro)gram)/(m.sup.3) (mean = 19.4 ((micro)gram)/(m.sup.3)). Nicotine concentrations at the four fixed locations ranged from 0.7 to 2.3 ((micro)gram)/(m.sup.3) (mean and median = 1.8 ((micro)gram)/(m.sup.3)).

The mean smoking frequency estimated from the subject activity logs was 1.5 cigarettes per hr, with a range from 0 to 3.2 cigarettes per hr over the two days. From the selection procedures for the personal monitoring subjects, the proportion of smokers in Building 2 was estimated at 22 percent.

#### Conclusions and discussion

The data gathered in the two study buildings provide an important case study of nonsmoker exposure to ETS in an office environment supplied with outside air ventilation rates nominally in accordance with ASHRAE Standard 62-1989, with smoking prevalence rates consistent with "average" smoking conditions in U.S. office workplaces.

Both the total building and fixed location HVAC performance assessments showed that, based on design occupancy loads, the HVAC systems were providing outside air to the occupied space at ventilation rates either in accordance with or slightly below the 20 cfm per occupant recommended in the ASHRAE standard and in conformance with comfort conditions recommended in ASHRAE Standard 55-1992, Thermal Environmental Conditions for Human Occupancy. These conclusions were further confirmed by the test results of the continuous monitoring of C(O.sub.2), temperature, and relative humidity in the study buildings.

Smoking conditions in both study buildings were representative of moderate amounts of smoking as defined by ASHRAE as 27 percent smokers with a rate of 1.25 cigarettes per hr.(11)

Concentrations of RSPs and nicotine measured at the fixed monitoring locations and during the personal exposure monitoring were similar. RSP concentrations in both buildings are similar to levels measured in other office environments with either no smoking or the presence of a moderate amount of smoking. Research has shown RSP levels to range typically from 20 to 80 ((micro)gram)/(m.sup.3) in mechanically ventilated buildings in which smoking is permitted throughout and from 15 to 50 ((micro)gram)/(m.sup.3) in nonsmoking buildings and nonsmoking areas of mechanically ventilated buildings where smoking is restricted to designated areas.(12-15)

Nicotine concentrations in both buildings were consistent with data reported from other office workplaces in which smoking is permitted without restriction, ranging between 1 and 6 ((micro)gram)/(m.sup.3).(5, 13, 15)

The low concentrations of the tracers of ETS exposure measured in the study buildings demonstrate that ETS-related constituent levels are effectively controlled through general dilution ventilation, which includes the effects of dilution by both outdoor and recirculated air.

ASHRAE Standard 62-1989 was based on research relating ventilation flow rates to measured concentrations of ETS tracers under laboratory conditions.(16) This research showed that an outdoor air ventilation rate of 20 cfm per occupant controlled tracers of ETS exposure to acceptable levels under conditions of moderate smoking activity. The results from the study buildings provide real-world verification of the experimental basis for ASHRAE Standard 62-1989.

#### Acknowledgments

The measurements of HVAC system performance were conducted by Air Conditioning Test and Balance Inc., Great Neck, N.Y. The research was

funded by Philip Morris USA. The conclusions expressed are solely those of the authors and do not necessarily reflect those of Philip Morris USA.

1 Superscript numerals indicate references listed at end of article.

#### References

- 1) ASHRAE Standard 62-1989, Ventilation for Acceptable Indoor Air Quality, American Society of Heating, Refrigerating and Air-Conditioning Engineers, 1989.
- 2) Persily, A. K., "Assessing Ventilation Effectiveness in Mechanically Ventilated Office Buildings," Proceedings of International Symposium: Room Air Connection and Ventilation Effectiveness, American Society of Heating, Refrigerating and Air-Conditioning Engineers, 1993.
- 3) Benner, C. L., et al., "Chemical Composition of Environmental Tobacco Smoke 2, Particulate-Phase Compounds," Environmental Science and Technology, (23):688-699, 1989.
- 4) Eatough, D. J., et al., "The Chemical Composition of Environmental Tobacco Smoke III, Identification of Conservative Tracers of Environmental Tobacco Smoke," Environment International, (15):19-28, 1989.
- 5) Guerin, M. R., R. A. Jenkins, and B. A. Tomkins, The Chemistry of Environmental Tobacco Smoke: Composition and Measurement, Lewis Publishers, 1992.
- 6) ASTM Standard D4532-92, Standard Test Method for Respirable Dust in Workplace Atmospheres, American Society for Testing and Materials, 1993.
- 7) ASTM Standard D5075-90, Standard Test Method for Nicotine in Indoor Air, American Society for Testing and Materials, 1993.
- 8) ASHRAE Standard 55-1992, Thermal Environmental Conditions for Human Occupancy, American Society of Heating, Refrigerating and Air-Conditioning Engineers, 1992.
- 9) Data File Documentation: National Health Interview Survey of Topics Related to Cancer Epidemiology (machine readable data file and documentation), U.S. National Center for Health Statistics, 1992.
- 10) Cohen, T., "Providing Constant Ventilation in Variable Air Volume Systems," ASHRAE Journal, 36(5):38-40, 1994.
- 11) Written Statement of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, presented to the U.S. Congressional Science, Space and Technology Subcommittee on Natural Resources, Agricultural Research, and Environment, May 9, 1991.
- 12) Sterling, E. M., C. W. Collett, S. Kleven, and A. Arundel, "Typical Pollutant Concentrations in Public Buildings," Indoor and Ambient Air Quality, 1988.
- 13) Sterling, T. D., and B. Mueller, "Concentrations of Nicotine, RSP, CO, and C(O.sub.2) in Non-Smoking Areas of Offices Ventilated by Air Recirculated from Smoking Designated Areas," Journal of the American Industrial Hygiene Association, 49(9):423-426, 1988.
- 14) Sterling, T. D., C. W. Collett, and E. M. Sterling, "Environmental Tobacco Smoke and Indoor Air Quality in Modern Office Work Environments," Journal of Occupational Medicine, 29(1):57-62, 1987.
- 15) Holcomb, L. C., "Indoor Air Quality and Environmental Tobacco Smoke: Concentration and Exposure," Environment International, (19):9-40, 1993.
- 16) Leaderer, B. P., W. S. Cain, R. Isseroff, and L. G. Berglund, "Ventilation Requirements in Buildings - II: Particulate Matter and Carbon Monoxide from Cigarette Smoking," Atmospheric Environment, 18(1):99-106, 1984.

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08747843 SUPPLIER NUMBER: 18382307 (THIS IS THE FULL TEXT)  
Anti-smoking forces question movement's focus on youth.(includes statistics  
on youth smoking)  
Hearn, Wayne  
American Medical News, v39, n23, p1(3)  
June 17, 1996

TEXT:

CHICAGO-Standing at a lectern beneath a large banner proclaiming, "Communities for Tobacco-Free Kids: Drawing the Line," Dileep G. Bal, MD, MPH, said something that may have surprised participants at a national tobacco control conference here.

"I think this whole youth uber alles (focus) is b.s.," declared Dr. Bal, chair of the American Cancer Society's prevention committee and chief of the cancer control branch of the California Dept. of Health Services.

And while he made the comment good-naturedly — eliciting laughter from several hundred tobacco control activists — it reflected a concern among some that their movement is focusing too narrowly on the problem of youth access to tobacco at the expense of other major initiatives. Among those cited are efforts to reduce environmental tobacco smoke, expand smoking cessation programs, broaden public education and increase tobacco excise taxes.

"The contention is that we may be putting too many eggs in one basket, and there may be something to that," said Thomas P. Houston, MD, AMA director of preventive medicine and environmental health.

"On the other hand, almost everything we do in tobacco control can be wrapped up with the youth issue in some way. Things like higher taxes and environmental tobacco smoke change the whole milieu in which children view tobacco. I think it's fair to say that this is a point of concern, debate and discussion. The point is, we need to be able to do more than one thing in parallel."

The two-day conference was hosted by the AMA and sponsored by the National Cancer Institute, the Centers for Disease Control and Prevention and the Robert Wood Johnson Foundation.

The invitation-only event drew about 700 experts, who shared strategies to:

- \* Curb industry efforts to win support in minority communities, such as through targeted advertising and funding of local causes and organizations.

- \* Enlist managed care organizations in tobacco control efforts. In several cases, competing HMOs have joined local anti-tobacco coalitions.

- \* Build community coalitions to counter "misinformation" campaigns by tobacco companies at state and local levels. For example, participants said the industry exploits confusion over new federal laws to win passage of state laws that pre-empt tougher local measures.

- \* Enlist state attorneys general as anti-smoking allies. Their involvement includes: lawsuits against tobacco companies to recoup public money spent on smoking-related illness; sting operations to uncover retailers who sell to minors; and defense of local laws that would be pre-empted by industrybacked state measures.

AMA President Lonnie R. Bristow, MD, made it clear in his opening remarks that organized medicine is committed to the cause. He reminded the



audience that AMA headquarters faces a building featuring a multistory mural advertising Joe Camel, the icon many feel is a direct appeal to children.

"So I want you to know: It's personal," Dr. Bristow said. "We know it, and they (industry officials) know it."

Losing ground with teens

Defenders of the current emphasis on the youth issue point out that teen smoking rates are increasing as rates for the general population have dropped.

"It's clear we're losing ground in a big way in the area of youth prevention, and we really haven't even begun to address the youth access issue," said Joseph R. DiFranza, MD, vice president of Stop Teenage Addiction to Tobacco, a national group based in Springfield, Mass.

The youth issue also represents a comfortable entry point for involvement by nontraditional public health partners, such as churches and children's advocacy groups. And it has emerged as the kind of white-hat issue that attracts nonpartisan funding support in an era of tight budgets.

For example, when the budget for the federal Office on Smoking and Health was doubled to \$20 million in 1994, the increase came with a congressional directive to emphasize youth prevention.

The youth issue also prompted Congress in 1992 to enact the so-called Synar Amendment, a new federal law that requires the states to enforce youth access laws and set goals for retail merchants' compliance, or lose federal money for mental health and substance abuse services.

Federal officials say it's nigh impossible to estimate what percentage of all public resources is devoted exclusively to the youth question, but there is no doubt that the issue dominates the public spotlight.

For example, the publicity over the Food and Drug Administration's current proposal to regulate tobacco as a means to reduce youth access has all but overshadowed the Occupational Safety and Health Administration's equally ambitious plan to ban smoking in most workplaces.

"I think the ship has tilted a bit too far to one side, and since we're a close group, I thought I owed it to them to point that out," Dr. Bal said in an interview after the conference. "I think a near-exclusive focus can diminish the multiple facets of a comprehensive program, and I think that nationally there is a real danger of that."

He acknowledged, however, that the youth access problem is "a very important issue, co-equal to any other issue we have" because the industry relies on the estimated 3,000 young people who begin smoking each day to replenish the ranks of adult smokers who die or quit.

The movement should continue to stress the youth question, Dr. Bal said, but as one component of an overall strategy.

He noted, for example, that working to achieve more smoke-free public and workplaces not only yields direct public health benefits — 50,000 deaths a year are attributed to second-hand smoke — but also helps curb teen smoking by "denormalizing" the habit.

Plea for a truce

In his speech, Dr. Bal also called for "a truce within our larger family" over the controversy, which arose in February when another California activist, Stanton A. Glantz, PhD, described "the youth access trap" in an editorial in the American Journal of Public Health. Dr. Glantz, professor of medicine at the University of California, San Francisco, is the researcher who analyzed the internal documents of the Brown and Williamson Tobacco Corp. for publication in the July 19, 1995, issue of JAMA.

According to Dr. Glantz, the current youth access campaign plays into

the industry's hands by perpetuating the notion that smoking is an "adult custom."

The strategy also inadvertently lends credence to the industry's public posture that it doesn't want children to smoke, he wrote, while actually teaching children how easy it is to buy cigarettes through its emphasis on retail store stings.

"Public health professionals need to step back from the current preoccupation with youth and return to a more balanced and sophisticated tobacco control program" Dr. Glantz wrote, adding that "more adult-centered approaches to controlling the tobacco epidemic have been displaced by the kids' agenda."

Dr. Glantz also noted that with the AMA virtually alone among major health groups as an active participant working with OSHA to develop rules for the workplace smoking restrictions, "the tobacco industry is dominating the proceedings by default."

He concluded: "If current trends continue, we will look back on the mid-1990s as a time that the tobacco industry once again outsmarted the public health community."

Matthew Myers, executive vice president and general counsel for the National Center for Tobacco-Free Kids, a new venture intended to serve as a clearinghouse and focal point for youth-related tobacco programs nationwide, agreed that the movement cannot afford to focus on a single issue.

"Historically, there may have been a problem of too many groups swinging too quickly from one issue to another," he said. "But as the movement has matured in the last two or three years, I think that's happening less and less."

Myers said that while the center will remain focused on strategies to reduce tobacco use among young people, "we've always emphasized that our agenda is only one piece of the broader puzzle."

"If anything, our goal is to free up more resources (for others) to work on issues like environmental tobacco smoke and the need for broad-based public education campaigns."

#### Youth and tobacco

According to new research, the problem is worsening:

- \* Nearly 35 percent of 9th through 12th graders were current smokers in 1995, up from 27.5 percent in 1991 and 30.5 percent in 1993.

- \* White (38.3 percent) and Hispanic (34 percent) students are more likely to smoke than African-American youths (19.2 percent), but smoking prevalence among black male teens has doubled since 1991.

- \* Nearly 39 percent of youth smokers say they purchase cigarettes in stores. Other sources: adult purchaser, vending machines, borrowing, stealing.

- \* More than 77 percent of students who buy cigarettes in stores report they don't have to show proof of age.

Sources: Centers for Disease Control and Prevention; Office of Social Science Research, University of Illinois at Chicago.

#### THE POLICY RESPONSE

Both state and local governments have acted:

- \* All states have enacted laws restricting youth access to tobacco products.

- \* Federal regulations require states to develop strategies and time frames for achieving merchant compliance rates of at least 80 percent.

- \* The FDA proposed restricting advertising and marketing practices, and banning vending machines and similar distribution methods.

Yet success is elusive:

\*Enforcement of youth-access laws varies greatly.

\*Political pressures by the tobacco industry and retail lobby result in weak laws that are difficult to enforce.

\*The industry has embraced the youth-access issue. Tobacco-control coalitions have difficulty competing against slick, youth-oriented industry image campaigns.

Sources: Centers for Disease Control and Prevention; Office of Social Science Research, University of Illinois at Chicago.

Teen-age health status is declining

One fact beyond dispute is that the health risks to adolescents are increasing. Drawing from a number of nationally representative surveys, an article in the June 7, 1995, JAMA documented that U.S. adolescents' health status has declined during the past few decades.

Authors Michele D. Wilson, M.D. and Alain Joffe, MD, MPH, of the Johns Hopkins University School of Medicine emphasized that the main risks to child and adolescent health are not purely biomedical, but behavioral and psychosocial — predominantly violence and injuries, substance use and the consequences of unprotected sexual activity.

Those are the issues that are often the subjects of research that would be affected by HR1271, the House bill that requires parental consent for minors to participate in federally funded surveys on certain sensitive health topics.

According to Drs. Wilson and Joffe, for example:

\* One fourth of respondents to a telephone survey of adolescents aged 10 to 16 years old reported having experienced an assault or abuse in the previous year.

\* Marijuana use among eighth-graders has more than doubled since 1991.

\* Teen-age pregnancy rates continue to be among the highest of developed nations, with about 1.1 million girls ages 15 to 19 becoming pregnant in 1991.

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The ledger of tobacco control: is the cup half empty or half full?(Editorial)

Davis, Ronald M.

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TEXT:

A dozen years ago, then-Surgeon General C. Everett Koop called for a smoke-free society by the year 2000. That goal became a rallying cry for legions of health professionals and health advocates who anguished over the harm wreaked by the most important preventable cause of death in our society.

Only 4 years remain in this millennium, and society as a whole will not be smoke free in the year 2000. In fact, smoking prevalence among adults in the United States leveled off from 1990 to 1993—at about 25%—after 25 years of consistent decline.(1,2) Moreover, smoking prevalence increased in 1995 for the fourth consecutive year among eighth- and tenth-graders, and for the third consecutive year among high school

seniors.(3)

On the other hand, much of society is already smoke free—many workplaces, homes, and public transport lines, for example. Public hostility toward the promotion and use of tobacco continues to grow. And some segments of the population are giving up tobacco at a record pace—most notably, African-American youth.(2)

We are at a crossroads in tobacco control. Opportunities for progress abound, and some are bearing fruit. Yet huge obstacles remain in our path, and new roadblocks are being erected continuously. This is a timely occasion, therefore, to take stock of our balance sheet in tobacco control. What are the major assets to celebrate and exploit? What are the major liabilities to bemoan and redress?

#### Assets

1. FDA Proposal.--The Food and Drug Administration (FDA) has proposed to regulate cigarettes and smokeless tobacco products as drug-delivery devices, which would involve strict curbs on their promotion and on minors' access to them.(4) As described by Arno and colleagues(5) in this issue of *The* the tobacco industry has launched an aggressive campaign to derail the proposal. The FDA is now reviewing the voluminous public comments it has received on the proposed rules, most of which were generated by the industry,(5) and will issue final rules at a later date. If this proposal survives legal challenges and other industry attacks, it will represent the most aggressive action ever taken by the federal government to reduce smoking among children.

Before (and after) the FDA rules take effect, states and localities can take action themselves to control the sale and promotion of tobacco products. The legal analysis by Garner(6) published in this issue of *The Journal* and another legal analysis prepared by the law firm Sidley & Austin for the American Medical Association (AMA)(7) provide a compelling case for local bans on tobacco billboards that would go beyond the restrictions proposed by the FDA.(4)

2. Presidential Leadership.--The FDA proposal was announced on August 10, 1995, at a press conference held by President Bill Clinton himself. Never before had a US president delivered a major statement on tobacco, nor had a president ever before championed a substantive proposal to deal with the problem. Since the proposal was first announced, the president, his wife, and Vice President Al Gore have been strong and consistent advocates for it.

3. Industry Documents.--A treasure trove of internal industry documents has surfaced, revealing long-standing industry knowledge of the health effects of smoking and the pharmacologic effects of nicotine.(4,8,9) These documents, many of which are now accessible on the World Wide Web (see <http://www.library.ucsf.edu/tobacco/bw.html>), have given legal support to the FDA's action, have spawned US Justice Department investigations of possible criminal behavior by tobacco companies and their executives,(10) and have provided the basis for litigation against the industry.

4. Litigation.--Several class-action and personal-injury lawsuits have been filed against the industry on behalf of millions of smokers addicted to nicotine or suffering from smoking-attributable disease. In addition, a half dozen states seeking reimbursement for Medicaid costs of treating illness caused by smoking have sued tobacco companies. The legal pressures, costs, and risks have become so intense that 1 cigarette company, the Liggett Group, reached a settlement last month with the plaintiffs in several of these cases. Liggett agreed to accept some of the proposed FDA rules and to fund smoking cessation programs—the first-ever break in the industry's record of never having settled or paid a cent in damages in

health-related litigation.(11,12)

5. Whistle-blowers.--People with past ties to the tobacco industry, including a company executive (Jeffrey Wigand),(13) company scientists (Victor Denoble, Ian Uydess, and others), (14,15) a lobbyist (the late Victor Crawford),(16) a paralegal (Merrill Williams),(17) advertising models (former Winston man Dave Goerhtz and former Lucky Strikes woman (and laryngectomee) Janet Sackman), and a family descendant (Patrick Reynolds, grandson of R. J. Reynolds),(18) have broken ranks with the industry, have divulged industry tactics and deceits, and, in some cases, have joined tobacco control campaigns. These heroes put a human face and voice onto the damaging documents that have escaped the industry's clutches.

6. Robert Wood Johnson Foundation.--The Robert Wood Johnson Foundation has invested tens of millions of dollars in tobacco control, including a tobacco policy research initiative,(19) a program providing assistance to states (Smokeless States, administered by the AMA), a project funding research in smoking cessation among women of childbearing age (Smoke-Free Families), and dozens of other individual projects in tobacco control research and advocacy. Recently the Foundation announced that it has committed \$20 million to a new National Center for Tobacco-Free Kids,(20) which will help create a more aggressive and better-coordinated national campaign against tobacco.

7. State Programs--In addition to the Robert Wood Johnson Foundation/AMA Smokeless States program, the National Cancer Institute (through its American Stop Smoking Intervention Study (ASSIST)) and the Centers for Disease Control and Prevention (through its IMPACT program) provide grants to states for tobacco control, ensuring at least a modicum of activity in tobacco control in all 50 states.(21)

8. AHCPR Guideline.--The Agency for Health Care Policy and Research (AHCPR) is releasing its Smoking Cessation Clinical Practice Guideline coincident with publication of this issue of The Journal, which includes a summary of the Guideline.(22) The Guideline is based on an exhaustive, 2-year review of the scientific literature on assessment and treatment of tobacco dependence, nicotine addiction, and clinical practice. The evidence-based recommendations include clinical, administrative, and policy strategies to make identification and effective treatment of smokers a routine part of medical practice. Only about half of smokers report having been advised by their physicians to quit smoking,(23) which underscores the urgent need for widespread implementation of the Guideline.

The Guideline recommends that all patients planning a quit attempt be offered nicotine replacement therapy (nicotine patch or nicotine gum) unless there is a clear medical contraindication.(22) This goes beyond previous dogma, which typically recommended nicotine replacement for those with evidence of strong physical dependence or a history of failed attempts to quit. The Guideline panel indicated a preference for the patch over the gum because of greater compliance and ease of use. Fiscella and Franks,(24) in a decision-analytic study published in this issue of The Journal, showed that adding the patch to smoking cessation counseling produces 1 additional lifetime quitter at a modest cost of \$7332; this finding supports health insurance coverage of nicotine patch therapy.

9. OSHA Proposal.--The Occupational Safety and Health Administration (OSHA) has proposed sweeping rules that would ban smoking in workplaces except in separately ventilated areas.(25) The Environmental Protection Agency estimates that a workplace smoking ban would prevent 7000 to 12 900 deaths per year over the first 50 years, with net economic benefits ranging from \$39 billion to \$72 billion per year.(26) The public comment period for this proposal recently ended after many months of administrative hearings,

which dragged on because of tobacco industry opposition and delaying tactics. The Clinton administration needs to give as much support to final promulgation and implementation of the OSHA proposal as it has given to the FDA proposal. This asset will become a catastrophic missed opportunity if it is left to languish.

Two studies published in this issue of *The Journal* confirm the need for, and the benefits of, workplace smoking bans. In a study of more than 10 000 participants in the Third National Health and Nutrition Examination Survey (NHANES III) by Pirkle and colleagues,(27) 25% of adult non-tobacco users reported exposure at work to environmental tobacco smoke (calculated from Table 2 of their article), and serum levels of cotinine (a metabolite of nicotine) were significantly associated with hours of exposure to environmental tobacco smoke at work. Longo and colleagues,(28) in a study of current and former smokers employed in 26 smoke-free hospitals in 21 states, found that these employees were much more likely to have quit smoking compared with community controls. This study provides further evidence that work-site smoking bans, in addition to protecting nonsmokers from exposure to environmental tobacco smoke, may provide a far more important public health benefit: encouraging employees to quit smoking.

#### Liabilities

1. Power and Money of the Industry.—Books have been written about the power, money, and misdeeds of the tobacco industry,(29-31) and most of the other liabilities discussed below flow from this one. Health advocates must continue their efforts to expose and oppose the activities and iniquities of this \$45 billion industry.

2. Politicians on Retainer.—"We have the best legislature money can buy," one often hears from tobacco control advocates toiling at the state level. Scores of legislators are more than ready to do the industry's bidding, well aware of the financial and political quid pro quo they will receive from the industry.(32,33)

The tobacco industry knows all too well that the best defense is a good offense. So instead of pushing good legislation, more and more we find ourselves fighting bad legislation sponsored by tobacco-friendly politicians. Examples include smokers' rights legislation,(34) tort reform that gives special protection to tobacco products and manufacturers,(35) preemption of local ordinances (see below), and bills that would penalize children who buy tobacco while protecting the vendors who sell it to them.(36)

With respect to Congress, what a difference an election makes. After the Republicans assumed control of the House of Representatives in 1995, Congressman Henry Waxman (D, Calif) lost his seat as chair of the Subcommittee on Health and the Environment, from which he had waged an effective war on tobacco and the tobacco industry. Congressman Thomas Bliley (R, Va), a former undertaker whose district includes the home of Philip Morris, became chair of the Commerce Committee, which controls most health legislation. But some things do not change: Lavish campaign contributions from the industry to members of Congress continue unabated.(37,38) No action to reduce tobacco use is expected from this Congress.

3. Preemption.—With Congress bottled up and most state legislatures under control, the tobacco industry now seeks to remove local threats. In some states (most notably California, Massachusetts, and Minnesota), health advocates have been very successful in convincing large numbers of communities to adopt strong tobacco control ordinances.(39,40) To snuff out community control, the industry is working in state legislatures throughout the country to pass laws preempting local authority to regulate

tobacco.(36,41) As of June 30, 1995, 17 state laws on smoke-free air contained local preemptions, and at least 10 states preempt local rules on youth access to tobacco products.(42)

4. Industry Allies.—The industry is able to shroud itself with a host of allies as it goes on about its business. They often do the industry's dirty work, either in public or behind the scenes. The long list includes advertising agencies and trade associations; media companies; those in the industry's distribution chain, such as tobacco farmers, wholesalers, grocers, and other retailers; labor unions and chambers of commerce; restaurant associations; high-powered law firms and public relations firms; researchers funded by tobacco money; and organizations dedicated to civil liberties, sports, and the arts. What distinguishes industry allies from the next category is that they are active participants in efforts to protect the promotion, sale, and use of tobacco.

5. Malignant Neglect.—A more passive but equally malignant role in protecting tobacco occurs when individuals and organizations allow their intellectual property to be misappropriated by the industry. The best examples are the economic consulting firms (eg, Wharton Applied Research Center, Chase Econometrics, and Price Waterhouse) that are hired by the industry to estimate its contribution to the job market.(43)

As Warner and Fulton have pointed out,(44)(p180) these firms produce "impressive-looking figures on the numbers of jobs dependent on tobacco ... (but) fail to consider that, if resources were not devoted to tobacco, they would be employed in other productive economic activities. . . ." One of the firms, Chase Econometrics, did add a caveat to its fall report, explaining that these compensatory reemployment responses to the hypothetical absence of tobacco "were constrained from taking place within this analysis."(45) The industry, of course, makes no mention of this job redistribution when it publicizes the findings of its consultants. The key question is, how can a highly respected economic consulting firm allow its analyses to be "constrained," and its findings to be misrepresented, to suit the industry's interests?

In a study published in this issue of *The Journal*, Warner and colleagues(43) address the net employment effects of tobacco in the conceptually correct manner. They show that "(c)ontrary to the tobacco industry's claims, reductions in spending on tobacco products will boost employment in every one of the 8 nontobacco regions and will not diminish employment in the Southeast Tobacco region by as much as the industry estimates."(43)(p1241) Moreover, in a model that eliminates tobacco sales in 1993, the nationwide impact would be a net increase of 133 000 jobs in the year 2000.(43)

6. Cowardice in the Media.—Numerous studies have shown that publications that accept tobacco advertising are less likely to provide coverage on smoking and health than publications refusing such advertising.(46) This behavior by the print media—whether resulting from self-censorship or threats by advertisers—is bad enough. But recent actions in the television industry are even worse.

In February 1994, ABC's *Day One* program aired a hard-hitting story alleging that tobacco companies manipulate nicotine levels in cigarettes. That story helped to accelerate the FDA's investigation of the tobacco industry and prompted Philip Morris to file a \$10 billion libel suit against Capital Cities/ABC Inc.(47) Even though ABC had good evidence to back up its claims, and the legal hurdles for the cigarette plaintiffs to prove libel were daunting, ABC settled the case in August 1995 by apologizing for reporting that Philip Morris adds significant amounts of nicotine "from outside sources."(48) A senior editor of *Newsweek* called the

apology "a blow to all real reporting."(49)

In November 1995, the CBS program 60 Minutes was planning to air an interview with Jeffrey Wigand, a former executive of the Brown and Williamson Tobacco Corporation. In the interview, Wigand alleged that company executives have long known that nicotine is addictive. On the advice of its lawyers, the network decided not to air the interview because of the risk of being sued by Brown and Williamson (among other reasons). Only after The Wall Street Journal published similar accusations by Wigand from a sealed legal deposition(50) did CBS approve the broadcast of the original interview, which finally aired on February 4, 1996.(51)

Many reporters are anxious to cover the misconduct of the tobacco industry, especially when a story derives from leaked documents or whistle-blowers. But, given the industry's scorched-earth approach to warding off threats, will media executives and lawyers give reporters leeway to continue to investigate it?

7. Dirt in Our Own House.—As we work toward a tobacco-free society, we must begin with the house of medicine. We have done well in reducing tobacco use among physicians and medical students to extremely low levels,(52,53) and most health facilities are smoke free.(54) In less obvious ways, however, we are still dependent on, or uncomfortably close to, tobacco. Many medical schools still accept tobacco industry funding of research.(55) Many health insurers maintain tobacco stocks in their pension plans.(56) Many health organizations retain lobbyists in the employ of the tobacco industry: In 1994, about half of the 400 tobacco industry lobbyists in 47 states also represented health interests, including state medical associations; hospitals; associations of respiratory care, psychology, optometry, pharmacology, nursing, anesthesiology, and dentistry; schools of medicine; and health insurers such as Blue Cross/Blue Shield.(57)

8. The Ugly American (and Briton).—As the United States and other industrialized nations slowly wean themselves from tobacco, the multinational tobacco companies, based primarily in the United States and in the United Kingdom, continue to make inroads in Eastern Europe and developing regions of the world.(58-60) If these incursions are not resisted, and if current smoking patterns continue, smoking-attributable mortality worldwide will increase from 3 million deaths per year now to 10 million per year by 2025.(61)

#### Conclusions

As seen in this balance sheet, the tobacco control movement enjoys strong assets, but faces formidable liabilities. Is the cup half empty or half full? Is the fluid level rising or falling? Readers will have to judge for themselves how to answer the first question, and we must await the future to answer the second.

In the meantime, however, we can take comfort in the equity we have built up. When we cash in our assets and pay off our liabilities, we are left with valuable equity to support the campaign: 3 decades of research on what works in tobacco control, more than a million health professionals and health advocates dedicated to the cause, a public that is largely supportive of what we are trying to do, and having truth and morality on our side.

(1.) Centers for Disease Control and Prevention. Cigarette smoking among adults—United States, 1993. MMWR Morb Mortal Wkly Rep. 1994;43:925-929. (2.) Giovino GA, Schooley MW, Zhu B-A, et al. Surveillance for selected tobacco-use behaviors—United States, 1900-1994. MMWR Morb Mortal Wkly Rep. 1994;43 (suppl SS-3):1-43. CDC Surveillance Summaries, November 18, 1994. (3.) Cigarette smoking among American teens rises again in 1995. Ann Arbor: University of Michigan Survey Research Center; December



15, 1995. Press release. (4.) Food and Drug Administration. Regulations restricting the sale and distribution of cigarettes and smokeless tobacco products to protect children and adolescents: proposed rule. Federal Register. August 11, 1995;60:41314-41375. (5.) Arno PS, Brandt AM, Gostin LO, Morgan J. Tobacco industry strategies to oppose federal regulation. JAMA. 1996;275:1258-1262. (6.) Gamer DW. Banning tobacco billboards: the case for municipal action. JAMA. 1996;275:1263-1269. (7.) Bierig JR, Weber SA, Scarborough TR. Legal analysis of approaches to state and local regulation of tobacco advertising and sales in the US. Tobacco Control. 1994; 3:257-262. (8.) Glantz S, Barnes DE, Bero L, Hanauer P, Slade J. Looking through a keyhole at the tobacco industry: the Brown and Williamson documents. JAMA. 1995;274:219-224. (9.) Wiener J. The cigarette papers. The Nation. January 1, 1996:11-18. (10.) Johnston D. Federal thrust against tobacco gets new vigor. New York Times. March 18, 1996:A1. (11.) Feder BJ. A united front by big tobacco starts to crack: Liggett agrees to settle class-action lawsuit. New York Times. March 14, 1996:A1, D6. (12.) Feder BJ. Liggett Group reaches pact with 5 states. New York Times. March 16, 1996:6. (13.) Gleick E. Tobacco blues. Time. March 11, 1996:54-60. (14.) Hilts PJ. Scientists say cigarette company suppressed findings on nicotine. New York Times. April 29, 1994:A1. (15.) Freedman AM, Hwang SL. Three ex-employees say Philip Morris deliberately controlled nicotine levels. Wall Street Journal. March 19, 1996:B1. (16.) Skolnick AA. Cancer converts tobacco lobbyist: Victor L. Crawford goes on the record. JAMA. 1995;274:199-202. (17.) Orey M. A mole's tale. Am Lawyer. July/August 1995:86-93. (18.) Reynolds P. Death from smoking in the RJ Reynolds family. Tobacco Control. 1995;4:94-99. (19.) Davis RM. Tobacco policy research comes of age. Tobacco Control. 1995;4:6-9. (20.) Noah T. Private group to unveil major initiative to discourage children from smoking. Wall Street Journal. February 12, 1996. (21.) Centers for Disease Control and Prevention. State Tobacco Control Highlights--1996. Atlanta, Ga: Centers for Disease Control and Prevention, Office on Smoking and Health; 1996. CDC publication 099-4895. (22.) The Smoking Cessation Clinical Practice Guideline Panel and Staff. The Agency for Health Care Policy and Research Smoking Cessation Clinical Practice Guideline. JAMA. 1996;275:1270-1280. (23.) Centers for Disease Control and Prevention. Physician and other health care professional counseling of smokers to quit: United States, 1991. MMWR Morb Mortal Wkly Rep. 1993;42:854-857. (24.) Fiscella IC, Franks P. Cost-effectiveness of the transdermal nicotine patch as an adjunct to physicians' smoking cessation counseling. JAMA. 1996;275:1247-1251. (25.) Occupational Safety and Health Administration. Notice of proposed rulemaking: notice of informal public hearing (29 CFR pts 1910, 1915, 1926, and 1928). Federal Register. April 5, 1994;59:15968-16039. (26.) US Environmental Protection Agency. The Costs and Benefits of Smoking Restrictions: An Assessment of the Smoke-Free Environment Act of 1993 (H.R. 3434). Washington, DC: Environmental Protection Agency, Office of Radiation and Indoor Air; 1994. (27.) Pirkle JL, Flegal KM, Bernert JT, Brody DJ, Etzel RA, Maurer KR. Exposure of the US population to environmental tobacco smoke: the Third National Health and Nutrition Examination Survey, 1988 to 1991. JAMA. 1996;275:1233-1240. (28.) Longo DR, Brownson RC, Johnson JC, et al. Hospital smoking bans and employee smoking behavior: results of a national survey. JAMA 1996;275:1252-1257. (29.) Taylor P. The Smoke Ring: Tobacco, Money, and Multinational Politics. New York, NY: Pantheon Books; 1984. (30.) Whelan EM. A Smoking Gun: How the Tobacco Industry Gets Away With Murder. Philadelphia, Pa: George F Stickley; 1984. (31.) White LC. Merchants of Death. The American Tobacco Industry. New York, NY: Beech Tree Books; 1988. (32.) Moore S, Wolfe SM, Lindes D, Douglas CE. Epidemiology of

failed tobacco control legislation. JAMA. 1994;272:1171-1175. (33.) Glantz SA, Begay ME. Tobacco industry campaign contributions are affecting tobacco control policymaking in California. JAMA. 1994;272:1176-1182. (34.) Malouff J, Slade J, Nielsen C, Schutte N, Lawson E. US laws that protect tobacco users from employment discrimination. Tobacco Control. 1992;2:132-138. (35.) Glasstris P. Frank Fat's napkin: how the trial lawyers (and the doctors!) sold out to the tobacco companies. Washington Monthly. December 1987:19-25. (36.) Feder BJ. Federal rule intensifies smoking fight in states. New York Times. March 15, 1996:A1, A9. (37.) Kemper V. The inhalers, Common Cause Magazine. Spring 1995:18-23. (38.) Common Cause. The Tobacco Industry and Washington A Breakdown of PAC and Soft Money Contribution, 1986 Through 1995. Washington, DC: Common Cause; 1996. (39.) Rigotti NA. No-smoking laws in the United States: an analysis of state and city actions to limit smoking in public places and workplaces. JAMA 1991;226:3162-3167. (40.) National Cancer Institute. Major Local Tobacco Control Ordinances in the United States. Bethesda, Md: National Cancer Institute; 1993. Monograph 3. National Institutes of Health publication 93-3532. (41.) Conlisk E, Siegel M, Lengerich E, MacKenzie W, Malek S, Eriksen M. The status of local smoking regulations in North Carolina following a state preemption bill. JAMA. 1995;273:805-807. (42.) Shelton DM, Alciati MH, Chang MM, et al. State laws on tobacco control--United States, 1995. MMWR Morb Mortal Wkly Rep. 1995;44(suppl SS-6):1-28. CDC Surveillance Summaries, November 3, 1995. (43.) Warner KE, Fulton GA, Nicolas PE, Grimes DR. Employment implications of declining tobacco product sales for the regional economies of the United States. JAMA. 1996;275:1241-1246. (44.) Warner KE, Fulton GA. Importance of tobacco to a country's economy: an appraisal of the tobacco industry's economic argument. Tobacco Control. 1995;4:180-183. (45.) Chase Econometrics. The Economic Impact of the Tobacco Industry on the United States Economy. Bala Cynwyd, Pa: Chase Econometrics; 1985;1:chap 5, p 3. (46.) Warner KE. Cigarette advertising and media coverage of smoking and health. N Engl J Med. 1985;312:384-388. (47.) Frankel A. Blowing smoke. Am Lawyer. July/August 1995:68-77. (48.) Freedman AM, Jensen E. Capital Cities/ABC, Philip Morris settle lawsuit. Wall Street Journal. August 22, 1995. (49.) Alter J. The cave on tobacco road: ABC's decision to settle with Philip Morris is a blow to all real reporting. Newsweek. September 4, 1995:29. (50.) Freedman AM. Cigarette defector says CEO lied to Congress about view of nicotine. Wall Street Journal. January 26, 1996:A1. (51.) Whistle-Blower fears for life. Associated Press. February 5, 1996. (52.) Hughes PH, Brandenburg N, Baldwin DC, et al. Prevalence of substance abuse among US physicians. JAMA 1992;267:2333-2339. (53.) Pierce JP, Gilpin E. Trends in physicians' smoking behavior and patterns of advice to quit. In: Tobacco and the Clinician Interventions for Medical and Dental Practice. Bethesda, Md: National Cancer Institute; 1994:12-23. Monograph 5. National Institutes of Health publication 94-3693. (54.) Longo DR, Brownson RC, Krase RL. Smoking bans in US hospitals: results of a national survey. JAMA. 1995;274:4&491. (55.) Blum A. Ethics of tobacco-funded research in US medical schools. Tobacco Control. 1992;1:244-245. (56.) Boyd JW, Himmelstein DU, Woolhandler S. The tobacco/health-insurance connection. Lancet. 1995;346:64. (57.) Bearman NS, Goldstein AO. Tobacco industry lobbying in U.S. states: a nationwide overview. In: Abstracts: American Public Health Association 123rd Annual Meeting and Exhibition. Washington, DC: American Public Health Association; 1995:426. Abstract. (58.) Sesser S. Opium war redux. The New Yorker. September 13, 1993:78-89. (59.) Barteechi CE. The global tobacco epidemic. Sci Am. May 1995;272:44-51. (60.) Slama K, ed. Tobacco and Health: Proceedings of the Ninth World Conference on

Tobacco and Health, Park, France, 10-14 October 1994. New York, NY: Plenum Press; 1995. (61.) Peto R, Lopez AD. Worldwide mortality from current smoking patterns. In: Durston B, Jamrozik K, eds. Tobacco and Health 1990: The Global War: Proceedings of the Seventh World Conference on Tobacco and Health, 1st-5th April 1990, Perth, Western Australia. Perth: Health Dept of Western Australia; 1990:66-68.

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Hospital smoking bans and employee smoking behavior: results of a national survey.

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#### TEXT:

CIGARETTE smoking remains a major cause of death and disability, accounting for more than 400 000 American deaths in 1990.(1) Beyond this human cost the considerable annual economic cost of medical care (\$50 billion)(2) and lost workplace productivity. Allowing smoking in the workplace can result in additional costs to employers related to operating and maintenance, such as housekeeping costs, ventilating expenses, life and safety code expenses, and replacing furniture and computer equipment.(3)

While smoking cessation can considerably reduce the health and economic tolls of smoking, further efforts to control smoking are needed. After 25 years of decline, the US smoking prevalence rate leveled off at about 26% until 1991.(4) Subsequently, an additional decline in prevalence has been reported,(5) possibly reflecting the proliferation of workplace smoking bans. Considering the enormous toll of smoking and sustained smoking prevalence rates, new tobacco control strategies are needed.

Many employers have addressed this issue with work place smoking bans. Since the majority of adult Americans spend half of their waking hours in the workplace, group norms discouraging workplace smoking have the potential to influence individual decisions to quit smoking. Conversely, workplace socialization in favor of smoking may spill into leisure time, contributing to habitual behaviors and addiction.

Researchers are increasingly aware that smoking is influenced by the legal, social, economic, and physical environment.(5,6) Changing the environment offers a greater chance of success in altering health behaviors and outcomes than can be accomplished with individual interventions. Policies such as purifying water, using childproof medication containers, and using fire-retardant fabrics may have more impact on health than other interventions.(7) Indeed, a number of behavioral and psychological models related to smoking support the premise that workplace smoking restrictions reduce tobacco use. Environmental cues, such as socialization and group

norms, are necessary components of tobacco cessation strategies in a population approach.(8) Such interventions hinder tobacco use by altering group support.(9-11) Thus, workplace smoking bans are justified as an intervention as well as a method of reducing environmental tobacco smoke (ETS). Currently, the first and only industrywide ban is the one mandated in hospitals by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), which accredits approximately 80% of all US hospitals.(12)

Hospitals were mandated by JCAHO standards to go smoke free by December 31, 1993. We first studied hospital compliance with the new standards, and we previously reported predictors of compliance.(13) In the present study, we analyze the policies' effects on smoking behavior of full-time employees working in smoke-free hospitals compared with current and former smokers from the same communities working in non-smoke-free environments. The primary outcome measures are the postban quit ratio and progression along the stages-of-change continuum toward quitting smoking.(14,15) The continuum, fully described by Prochaska and DiClemente,(16,17) includes the 5 stages applicable smoking cessation: precontemplation, contemplation, ready for action, action, and maintenance. Although the national standard was put into place in 1993, we found that many hospitals began policy implementation earlier. Thus, it was possible to examine the smoking behavior of employees from these hospitals up to 5 years after implementation of the ban.

Previous studies of workplace smoking bans generally lacked control groups and investigated restrictions in only 1 location over relatively short periods. Interestingly, the majority of workplace smoking studies examine hospital employees. However, most of these are case reports of varying quality. Convenience samples of small numbers of employees have been used, and studies generally lacked comparison groups. We found only 1 study that used data from multiple, (5) hospitals; no comparison group was included.(18) With few exceptions, clearly defined smoking outcomes and controls were lacking in the reported studies. Other investigators found conflicting results in smoking behavior outcomes where workplace restrictions were implemented. For example, percentage decreases in smoking prevalence among employees ranged from 0% to 26%.(18-23)

Hospital employees constitute an appropriate study population for this investigation. The hospital industry is the first and only industry with a national smoking ban.(13) Contrary to what might be expected, hospital employees smoke at rates equivalent to those found in the general population.(8,24) In fact, 23% of nurses, the largest single category of hospital employees, are smokers, compared with approximately 23.5% of the general female population and 25% of the general population.(25,26) Both the public and the research community have raised concerns regarding the underrepresentation of women and minorities in studies of health outcomes. Here, we focus on hospitals, where 76% of employees are women (compared with 46% of the general adult working population) and 16.6% are African American (compared with 8.2% of the general adult working population).(27)

Finally, smoking's impact on the hospital employee population alone is significant. Hospitals employ approximately 5 Million Americans, 4.2% of the total US workforce. As such, they constitute a large and vital component of all US workers. By multiplying the smoking prevalence in the hospital employee population by their average family size, we calculate that at least 3.3 million Americans are affected by hospital employees' direct and sidestream smoke. This is a conservative estimate, as it does not consider those outside the family who may also be affected.

#### METHODS Study Design

Our goal was to determine the impact and effect of bans on behavior of individuals employed in smoke-free workplaces compared with those employed in nonsmoke-free workplaces. We anticipated that the JCAHO smoke-free s would change social norms and create environmental cues that would help decrease smoking prevalence. The study design was quasi-experimental, consistent with recommendations found in the literature.(28-30) This is a cross-sectional study and is part of a larger, ongoing prospective study. We randomly selected hospitals and their corresponding communities. Furthermore, we randomly selected subjects from hospitals' employee lists and their corresponding communities.

#### Intervention and Comparison Groups

A stratified random sample of US hospitals was used to ensure the accuracy of estimates and to provide adequate representation across hospital sizes and state characteristics. Two levels of stratification were used. First, we divided US states into 3 groups based on acres in tobacco cultivation and level of state tobacco taxation. Second, we divided hospitals into 4 groups based on size, using number of beds as a proxy. These divisions by location and size yielded a total of 12 strata.

We randomly selected hospitals from a list of all JCAHO-accredited hospitals; the hospitals we selected were located in 21 states. We used the equal probability of selection method (also called the probability proportionate to size sampling method) as described by Kish(31) and Fowler.(32) The hospitals were weighted by the number of employees to ensure equal probability of selection. This method provided a sufficient sample size to account for the design effect.(31,33) We determined that within each stratum we needed to use at least 2 hospitals to have samples of hospital employees that represented all employees in the comparative strata. Thus, for 12 strata, we needed to obtain employee lists for at least 24 hospitals. In strata 1 to 10, we obtained lists from 2 hospitals, and in strata 11 and 12, we obtained lists from 3 hospitals, for a total of 26 hospitals. Lists were obtained from 3 hospitals in strata 11 and 12 because the first 2 hospitals randomly selected did not have sufficient employees to provide the necessary sample size. Enough hospitals were selected to yield 1469 employees for the intervention group, defined as adult (age (greater than or equal to)18 years), full-time hospital employees who were ever smokers (current or former smokers) at the time it was announced that a workplace smoking policy would go into effect. We conducted telephone surveys of a random sample of hospital employees from lists provided by the hospitals.

Since only full-time hospital employees were studied, all physicians were excluded. Physicians (who are generally medical staff members and not hospital employees) employed by hospitals account for only 1.2% of the total number of hospital employees.<sup>34</sup> The exclusion of physicians from the study was based on the practical reality of hospital employment as well as the fact that previous investigations found that physicians differ from the general population in smoking behavior, in that they report a lower prevalence of smoking.(26,35,36) We studied managerial, professional, clerical, blue collar, skilled, and unskilled employees, most of whom had jobs similar to those in many other US workplaces. These categories of employees were defined in accordance with the US Bureau of Labor Statistics.(27)

The comparison group consisted of ever smokers employed in workplaces without smoke-free policies who lived in the same community (determined by telephone prefix) as the hospital employees. This provided a degree of matching according to community socioeconomic factors. The community comparison groups were randomly selected through the Waksberg method for

3-stage cluster sampling.(37) First, all 8-digit primary sampling telephone banks (the area code plus the first 5 digits of the telephone number) were collected from the hospital employee lists. Second, 2-digit random numbers were generated and added to the primary sampling telephone banks to create telephone numbers from each cluster. Third, 1 adult ((greater than or equal to)18 years of age) was randomly selected from each household based on the number of adults in the household and the last 4 digits of the telephone number. This method's advantage is that more contacts were made than by simply randomizing all 4 suffix digits. It also gives unlisted telephone numbers, about 27% of all residential telephone numbers, an equal chance of selection.

#### Hypotheses

This study's goal was to assess the impact of workplace smoking bans on the smoking behavior of hospital employees. We hypothesized that, compared with the community comparison group, such bans would result in increased smoking cessation as well as advancement along the stages-of-change quitting continuum. Our 2 major hypotheses were that full-time employees of workplaces with smoke-free policies (1) would experience a higher postban quit ratio than full-time employees of workplaces with a non-smoke-free environment and (2) would report more progress on the stages-of-change continuum than full-time employees of workplaces with a non-smoke-free environment.

#### Outcome Measures

The primary outcomes used to measure quitting behavior are the postban quit ratio and movement along the stages-of-change continuum. The term quit ratio,(38,39) commonly used in the smoking literature, describes the major end point in this study. The quit ratio is the number of former smokers divided by the number of ever smokers (current and former smokers) at a given point in time. To measure the effect of the ban, we calculated the postban quit ratio, which was the quit ratio at a particular time after the ban among the group of ever smokers who were current smokers when the ban was implemented. For the comparison group, measurement was done in a similar manner, using the time cutpoints based on when the ban was implemented in the corresponding community.

The stages-of-change continuum can be determined in the intervention and control populations by assessment of readiness to quit smoking, attempts to quit, and level of smoking addiction through specific questions included in the telephone survey instrument. Because of the overall validity of self-report measures and the high cost of biochemical testing, we did not conduct cotinine assays.(38,40,41)

#### Survey Instrument

Our survey instrument was adapted from the Behavioral Risk Factor Surveillance Survey (BRFSS), sponsored by the Centers for Disease Control and Prevention,(42) and from work of the National Heart, Lung, and Blood Institute.(43-45) The questionnaire modeled on the Behavioral Risk Factor Surveillance Survey has been tested and found reliable and valid.(46-48)

#### Sample Size and Power Analysis

The following steps were taken: (1) The total sample size for the hospital survey was selected so that the estimate of a population proportion would be in error by at most 3%, with a confidence level of 95%. (2) The total sample size obtained in step 1 was divided among the 12 strata so that when data from each stratum were used to estimate the proportion for that stratum, the errors of these estimates would be approximately the same among all 12 strata. (3) For the employee survey, the total sample size required to estimate a proportion with at most a 3% error was divided among the strata proportional to the number of employees

in each stratum, with 2 constraints: at least 2 hospitals would be factored in each stratum, with at least 25 employees from each hospital. In the intervention and comparison groups (consisting of current and former smokers), 1469 and 920 employees, respectively, were initially surveyed. Of those, 856 in the intervention group and 715 in the comparison group were smoking at the time of the ban; these subjects were used in the analyses. These sample sizes were sufficient to detect differences in quit rates as small as 0.11 vs 0.06 with a power of at least 0.8 ( $\alpha=0.05$ ), even if the sample sizes were adjusted for a small intraclass correlation.

#### Statistical Methods

Three methods of analysis were used to examine the outcomes. We tested for differences in the postban quit ratio between the hospital employees and the community sample at specific time intervals using X<sup>2</sup> tests. To compare these groups' postban quit ratios, we employed a stratified Cox proportional hazards model.<sup>(49)</sup> Time to an event was the number of days from the announcement or implementation of the ban until a subject quit smoking. If a subject quit smoking, we recorded the time to this event. If a subject had not quit by the time of the survey, the time to an event was censored. This model allowed the pairing of a hospital and community and did not require the baseline hazard function to be the same across pairs. A goodness-of-fit test was used to test the proportional hazards assumption, with the result that the assumption was not violated.<sup>49</sup>

In an additional analysis, appropriate covariates, such as sex, social class, education level, job category, and preban smoking intensity (measured in average number of cigarettes smoked per day), were included in the proportional hazards model to determine whether there was a significant difference between hospital employees and community counterparts on the quit ratio after accounting for these covariates. A variable was deemed appropriate as a covariate if the hospital and community samples were significantly different for that variable or if the variable was related to the postban quit ratio.

Because stages-of-change data were ordinal, we employed a Cochran-Mantel-Haenszel analysis of variance statistical based on ranks to check for differences between employees of smoke-free and non-smoke-free workplaces. We stratified on the hospital-community pair to account for the pairing of hospitals with communities while allowing for differences between pairs. In a second analysis, sex, social class, education level, and job category were included as additional stratifying variables for calculating the Cochran-Mantel-Haenszel statistic. This was done to determine whether a significant difference existed between hospital employees and community counterparts on stages of change after accounting for these additional stratifying variables. It was deemed appropriate to employ a variable as an additional stratum if the hospital and community samples were significantly different for that variable or if the variable was related to stages of change.

#### RESULTS

Our response rates were 84% for hospital employees who met eligibility criteria, 64% for the community comparison group, and 70.5% overall. Sample characteristics for the hospital and community samples are presented in Table 1. The samples were significantly different on age ( $P<0.001$ ), sex ( $P<0.001$ ), social class ( $P<0.001$ ), education level ( $P<0.001$ ), and job classification ( $P<0.001$ ). The age difference, while statistically significant, was very small (1.6 years). The sex difference was expected given the overwhelming percentage of women who work in hospitals. The quit ratios were significantly related to social class and education. Consistent with previous studies,<sup>(4)</sup> quit ratios were higher for those with higher

education and for those with higher incomes. Because of the differences between findings in our sample and in the literature, when outcome measures were analyzed, the 5 variables that had meaningful differences were used as covariates to account for these differences.

Our findings show that the postban quit ratio was significantly different between the intervention and comparison groups (Figure 1 and Table 2). Hospital employees who worked in a smoke-free environment reported a 1-year postban quit ratio of up to 0.066 (95% confidence interval (CI), 0.050-0.082), compared with 0.038 for community counterparts (95% CI, 0.025-0.052) working in non-smoke-free environments ( $P=.02$ ). For employees whose hospitals' bans were implemented at least 5 years prior to our survey, the postban quit ratio was 0.506 (95% CI, 0.475-0.538), compared with 0.377 for community respondents (95% CI, 0.346-0.408) who had been working in non-smoke-free workplaces ( $P=.001$ ). Results from the Cox proportional hazards model using all available data indicate that time to quit smoking was shorter for the hospital employees than for the community comparison group ( $P<.001$ ), with an overall relative risk of quitting of 2.0 (95% CI, 1.6-2.5). Statistical differences were also found when the postban quit ratios of workplaces with and without smoking bans were compared using the Cox proportional hazards model after accounting for a variety of factors, such as socioeconomic characteristics, demographic characteristics, and smoking intensity. The relative risk decreased slightly, to 1.7 (95% CI, 1.2-2.4), but it remained significant ( $P=.001$ ). Data were also analyzed using the time from ban announcement, and the same relationship held (relative risk, 2.1; 95% CI, 1.6-2.6;  $P<.001$ ). We also found that for hospital employees who continued to smoke, average daily consumption decreased by 1.1 cigarettes ( $P=.01$ ).

It is acknowledged that a workplace smoking ban in many cases is accompanied by a number of related organizationwide initiatives. Twenty-two (85%) of the 26 hospitals in our study reported providing smoking cessation assistance to employees as part of their no-smoking efforts. In the larger sample we drew on to select our 26 hospitals, we found that these efforts included the posting of no-smoking signs in the institution ( $n=456$  (43.2%)), the most frequently mentioned type of assistance; the provision of nicotine gum at a reduced price ( $n=81$  (7.7%)) or free of charge ( $n=17$  (1.6%)); and hypnosis (8%), the least frequently mentioned type of assistance.

Finally, Figure 2 shows that a higher percentage of hospital employees than community employees progressed further toward cessation on the stages-of-change continuum ( $P<.001$ ). Almost half (46.8%) of the community employees were in the precontemplative stage, compared with 31.9% of the hospital employees. This was expected, since many hospital employees who had quit at the time of the survey would have been in the precontemplative stage prior to quitting. More hospital employees were seriously contemplating quitting, 30.5% compared with 23.4% in the community sample. Also, a higher percentage of the hospital employees (21.2%) than community employees (12.9%) was in the maintenance stage of smoking cessation. However, after accounting for demographic and socioeconomic variables, there was no significant difference in this category ( $P=.10$ ).

#### COMMENT

We found that hospital employees, subject to the workplace smoking ban, had increased quitting (measured by the postban quit ratio) and may have had increased movement on the stages-of-change quitting continuum compared with the comparison group, not subject to a workplace smoking ban. This study provides further insight into a policy approach to the reduction of tobacco smoking. Environmental interventions may facilitate change in



individual behavior.<sup>(51)</sup> Since most adult Americans spend a significant number of their waking hours in the workplace, workplace behavior may influence individual decision making. We believe the related issue of workplace socialization, which contributes to habitual behaviors and addiction, must be addressed in a comprehensive approach to tobacco control. When smoking is permitted in the workplace it becomes part of the organizational culture and norms.

If the objectives of Healthy People regarding smoking are to be achieved, workplace smoking bans will play a vital role. Such bans are particularly important not only for healthy lifestyles but also to decrease health care utilization and indirect costs from absenteeism and to lower health and life insurance rates. Given health care's escalating cost to American business and ultimately to consumers, identifying a long-term strategy such as that described in this article may result in better employee health as well as better corporate economic health. The smoking ban policies discussed above provide a comprehensive national population-based intervention to reduce tobacco usage, at least among the hospital-based working population.

Our study is the largest and only national investigation to date of industry-wide smoking bans. It supports the findings of some previous, smaller-scale investigations. For example, in 1 of the few smoking policy studies that used a comparison group, a telephone survey of a randomly selected sample of employees at 2 university-affiliated general medical institutions, the mean daily cigarette consumption by employees at the hospital with a smoking policy decreased from 8.4 to 4.5 after implementation.<sup>(22)</sup> However, the quit ratios and home smoking rates were similar in both groups 1 year later. One of the few prospective cohort studies found a 25% decrease in postban employee smoking prevalence.<sup>(23)</sup> Overall prevalence decreased from 21.7% 2 months before ban implementation to 16.2% 1 year later. Employees who continued smoking reported reducing consumption by 25%, from 16.4 to 13.1 cigarettes per day. The number of cigarettes smoked at work dropped from 7.8 to 3.8 per day. However, this study did not use a comparison group and was conducted at only 1 location. In 1 of the largest studies, data were analyzed from a random sample of 1997 hospital employees from 5 hospitals 4 months after smoking ban implementation.<sup>(18)</sup> All hospitals had similar postban quit ratios. Nine percent of those who had quit smoking since the ban attributed their success to this restriction. Fifty-seven percent of those who continued smoking reported reducing their consumption. Although multiple workplaces were used, there was no comparison group. These previous studies, followed by our large national investigation, provide strong support for the effectiveness of workplace smoking bans on hospital employee smoking behavior.

Four potential limitations should be noted: (1) Generalizability is recognized as a potential problem in most studies. To deal with this issue, we compared population characteristics, including smoking behavior and demographic characteristics, from the Behavioral Risk Factor Surveillance Survey and the National Health Interview Survey (NHIS) and found no differences in distribution. As noted above, our female smoking rate is similar to the general population rate. We matched the comparison group by community rather than by job category. (2) There may be a concern regarding the use of self-reported smoking data; however, because of the documented accuracy of self-report measures <sup>(38)</sup> and the high cost of biochemical testing, we did not conduct cotinine assays.<sup>(3)</sup> A randomized controlled trial would be methodologically superior, but this was impossible since participants could not randomly be assigned to smoke-free and

non-smoke-free environments. (4) The results may be influenced by current smokers deciding to seek employment at workplaces where smoking is permitted. To our knowledge, there are no reports that the rate of employee turnover has increased because of smoking bans. It is not possible, however, to make that determination from the current study. We are conducting a follow-up study that will address this issue.

Further research is needed to study relapse and longer-term (past 1 year) policy effects on relapse rates. The emphasis of our study is on smokers' responses to a smoking ban. However, there is a much broader issue that must be acknowledged as relevant: the impact of ETS on smokers and nonsmokers. In fact, many smoking bans originate because of the concern about ETS. The impact of ETS in general has been well documented,(53-60) as have its in the workplace(61-63) and on pregnant women, fetuses, and children.(64-73) While we recognize the importance of this issue, our study is limited to a direct focus on the effect of smoking bans on smokers. Clearly, the issue of exposure to ETS in the workplace and its related health effects is far greater than that documented here; it is hoped that future research will address this issue.

This study is reported at a most opportune time. Hospitals have recently implemented the JCAHO's new smoke-free standards and as such may be viewed as "early adopters," consistent with diffusion of innovation theory.(74) Hospitals may serve as models for other industries concerning (1) knowledge of how industrywide changes may be achieved, (2) nature and extent of restrictive policies, (3) types of implementation issues faced, and (4) effect of the workplace bans on smoking behavior outside the workplace. By studying the early natural history of workplace restrictions on smoking behavior in the hospital sector, we have gleaned information that can be applied to other workplaces. As Rogers(74) suggests, "Potential adopters (may) look to early adopters for advice and information about the innovation. The early adopter is considered by many as 'the individual to check with' before using a new idea." The role of early adopter is a very logical one for hospitals to play in an area such as smoking cessation.

Based on these findings, we believe the widespread adoption of workplace restrictions could have major beneficial health effects. If we as a nation are to further reduce morbidity and mortality from smoking behavior, we need to consider interventions such as workplace bans that may provide cost-effective ways to reduce smoking prevalence and eliminate exposure to workplace hazards, such as ETS.

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(Figures 1 & 2 ILLUSTRATION OMITTED)

#### References

- (1.) Cigarette smoking attributable mortality and years of potential life lost—United States, 1990. MMWR Morb Mortal Wkly Rep. 1993;42:645-649.
- (2.) Medical care expenditures attributed to cigarette smoking—United States, 1993. MMWR Morb Mortal Wkly Rep. 1994;43:469-472.
- (3.) Mudarri DH. The Costs and Benefits of smoking Restrictions: An Assessment of the Smoke-Free Environment Act of 1993 (H.R. 3434). Washington, DC: Indoor Air Division, Office of Air and Radiation, Environmental Protection Agency; 1994.
- (4.) Giovino GA, Schooley MW, Zhu BP, et al. Surveillance for selected tobacco-use behaviors—United States, 1900-1994. MMWR CDC Surveill Summ. 1994;43(SS-3):1-43.
- (5.) Centers for Disease Control and Prevention.

Cigarette smoking among adults--1993. *MMWR Morb Mortal Wkly Rep.* 1994;43:925-930. (6.) McKinlay JB. The promotion of health through planned sociopolitical change: challenges for research and policy. *Soc Sci Med.* 1993;36:109-117. (7.) Fielding JE. Successes of prevention. *Milbank Q.* 1978;56:274-302. (8.) Winett RA, King AC, Altman DG. *Health Psychology and Public Health: An Integrative Approach.* Boston, Mass: Allyn & Bacon Inc; 1994. (9.) Novotny TE, Shane P, Daynard RA, Connolly GN. Tobacco use as a sociologic carcinogen: the case for a public approach. In: DeVita VT, Hellman S, Rosenberg SA, eds. *Cancer Prevention.* Philadelphia, Pa: JB Lippincott; 1992:1-15. (10.) Chapman S, Bloch M. Preface. *Tobacco Control.* 1992;1:S2-S3. (11.) Shiffman S, Shumaker SA, Abrams DB, et al. Models of smoking relapse. *Health Psychol.* 1986; 5(suppl):13-27. (12.) Joint Commission on Accreditation of Health-care Organizations. *Accreditation Manual for Hospitals.* Oakbrook Terrace, Ill: Joint Commission on Accreditation of Healthcare Organizations; 1992. (13.) Longo DR, Brownson RC, Kruse RL. Smoking bans in US hospitals: results of a national survey. *JAMA.* 1995;274:488-491. (14.) DiClemente CC, Prochaska JO, Fairhurst SK, Velicer WF, Velasquez MM, Rossi JS. The process of smoking cessation: an analysis of precontemplation, contemplation, and preparation stages of change. *J Consult Clin Psychol.* 1991;59:293-304. (15.) DiClemente CC, Prochaska JO. Self-change and therapy change of smoking behavior a comparison of processes of change in cessation and maintenance. *Addict Behav.* 1982;7:133-142. (16.) Prochaska JO, DiClemente CC. The Transtheoretical Approach: Crossing Traditional Boundaries of therapy. Homewood, Ill: Dow Jones-Irwin; 1984. (17.) Prochaska JO, DiClemente CC, Velicer Wf, Gimpil S, Norcross JC. Predicting change in smoking status for self-changers. *Addict Behav.* 1985;10:395-406. (18.) Goldstein AO, Westbrook WR, Howell RE, Fischer PM. Hospital efforts in smoking. control: remaining barriers and challenges. *J Fam Pract.* 1992;34:729-734. (19.) Borland R, Chapman S, Owen N, Hill D. Effects of workplace smoking bans on cigarette consumption. *Am J Public Health.* 1990;80:178-180. (20.) Borland R, Owen N, Hocking B. Changes in smoking behaviour after a total workplace smoking ban. *Aust J Public Health.* 1991;15:130-134. (21.) Wakefield MA, Wilson D, Owen N, Esterman A, Roberts L. Workplace smoking restrictions, occupational status, and reduced cigarette consumption. *J Occup Med.* 1992;34:693-697. (22.) Biener L, Abrams DB, Follick MJ, Dean L. A comparative evaluation of a restrictive smoking policy in a general hospital. *Am J Public Health.* 1989;79:192-195. (23.) Stillman FA, Becker DM, Swank RT, et al. Ending smoking at the Johns Hopkins Medical Institutions: an evaluation of smoking prevalence and indoor air pollution. *JAMA.* 1990;264:1565-1569. (24.) Stillman FA, Hantula DA, Swank R. Creating a smoke-free hospital: attitudes and smoking behaviors of nurses and physicians. *Am J Health Promot.* 1994;9:108-114. (25.) *Smoking and Health Information National Health Interview Surveys, Selected Years, 1965-1991.* Atlanta, Ga: Centers for Disease Control and Prevention; 1995. (26.) Nelson DE, Giovino GA, Emont SL, et al. Trends in cigarette smoking among US physicians and nurses. *JAMA.* 1994;271:1273-1275. (27.) *Employment and Earnings.* Washington, DC: Bureau of Labor Statistics, US Dept of Labor, 1994;41. (28.) Cook TD, Campbell DT. *Quasi-experimentation: Design and Analysis Issues for Field Settings.* Chicago, Ill: Rand McNally; 1979. (29.) Gottlieb NH, Eriksen MP, Lovato CY, Weinstein RP, Green LW. Impact of a restrictive work site smoking policy on smoking behavior, attitudes, and norms. *J Occup Med.* 1990;32:16-23. (30.) Borgatta EF, Evans RR. *Smoking Health, and Behavior.* Chicago, Ill: Aldine Publishing Co; 1968. (31.) Kish L. *Survey Sampling.* New York, NY: John Wiley & Sons Inc; 1965. (32.) Fowler FJ Jr. *Survey Research Methods.* 2nd ed. Newbury Park, Calif. Sage Publications Inc; 1993.

33. Frey JH. Survey Research by Telephone. 2nd ed. Newbury Park, Calif: Sage Publications Inc; 1989. (34.) Koepsell TD, Martin DC, Diehr PH, et al. Data analysis and sample size issues in evaluations of community-based health promotion and disease prevention programs: a mixed-model analysis of variance. *J Clin Epidemiol*. 1991;44:701-713. (35.) Garfinkel L, Stellman SD. Cigarette smoking among physicians, dentists, and nurses. *CA Cancer J Clin*. 1986;36:2-8. (36.) Hughes PH, Conard SE, Baldwin DC Jr, Storr CL, Sheehan DV. Resident physician substance use in the United States. *JAMA*. 1991;265:2069-2073. (37.) Waksberg J. Sampling methods for random digit dialing. *J Am Stat Assoc*. 1978;73:40-46. (38.) Smoking and Health: A National Status Report to Congress. Rockville, Md: US Dept of Health and Human Services; 1990. Publication CDC 87-8396. (39.) Reducing the Health Consequences of Smoking: 25 Years of Progress: A Report of the Surgeon General: Executive Summary. Washington, DC: Office on Smoking and Health, Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control; 1989. Publication CDC 89-8411. (40.) The Health Benefits of Smoking Cessation. Rockville, Md: Office on Smoking and Health, US Dept of Health and Human Services; 1990-25-29, 46. Publication CDC 90-8416. (41.) Survey on Tobacco Use, 1991: Summary Report. Atlanta, Ga: Centers for Disease Control; 1991. (42.) Emont SL, Zahniser SC, Marcus SE, et al. Evaluation of the 1990 Centers for Disease Control and Prevention Smoke-Free Policy. *Am J Health Promot*. 1995;9:456-461. (43.) Brownson RC, Jackson-Thompson J, Wilkerson JC, Davis JR, Owens NW, Fisher EB. Demographic and socioeconomic differences in beliefs about the health effects of smoking. *Am J Public Health*. 1992;82:99-103. (44.) Gentry EM, Kalsbeek ED, Hogelin GC. The behavioral risk factor surveys, II: design, methods, and estimates from combined state data. *Am J Prev Med*. 1985;1:9-14. (45.) Remington PL, Smith MY, Williamson DF, Anda RF, Gentry EM, Hogelin GC. Design, characteristics, and usefulness of state-based behavioral risk factor surveillance. *Public Health Rep*. 1988;103:366-375. (46.) Brownson RC, Jackson-Thompson J, W JC, Kiani F. Reliability of information on chronic disease risk factors collected in the Missouri Behavioral Risk Factor Surveillance System. *Epidemiology*. 1994; 5:545-549. (47.) Jackson C, Jatulis DE, Fortman SP. The Behavioral Risk Factor Survey and the Stanford Five-City Project Survey: a comparison of cardiovascular risk behavior estimates. *Am J Public Health*. 1992; 82:412-416. (48.) Shea S, Stein AD, Lantigua R, Basch CE. Reliability of the behavioral risk factor survey in a triethnic population. *Am J Epidemiol*. 1991;133:489-500. (49.) Kalbfleisch JD, Prentice RL. The Statistical of Failure Time Data. New York, NY: John Wiley & Sons Inc; 1995. (50.) Landis RJ, Heyman ER, Koch GG. Average partial association in 3-way contingency tables: a review and discussion of alternative tests. *Int Stat Rev*. 1978;46:237-254. (51.) Brownson, RC, Matson DM, Novotny TE, Hughes RG, Erikson MP. Environmental and policy interventions to control tobacco use and prevent cardio-vascular disease. *Health Educ Q*. 1995;M478-498. (52.) Healthy People 2000: National Health Promotion and Disease Prevention Objectives. Hyattsville, Md: US Dept of Health and Human Services; 1991. Publication PHS 91-50213. (53.) Davis RM, Boyd GM, Schoenborn Ca. 'Common courtesy' and the elimination of passive smoking: results of the 1987 National Health Interview Survey. *JAMA*. 1990;263:2208-2210. Correction: *JAMA*. 1990;263:3025. (54.) Borland R, Pierce JP, Burns DM, Gilpin E, Johnson M, Bal D. Protection from environmental tobacco smoke in California: the case for a smoke-free workplace. *JAMA*. 1992;268:749-752. (55.) Health Effects of Passive Smoking: Assessment of Lung Cancer in Adults and Respiratory Disorders in Children. Washington, DC: Environmental Protection Agency; 1990. Publication EPA 600/6-90/006A. (56.) Respiratory Health Effects of Passive Smoking: Lung

Cancer and Other Disorders. Washington, DC: Environmental Protection Agency; 1992. Publication EPA 600/6-90/006F. (57.) Fontham ETH, Correa P, Reynolds P, et al. Environmental tobacco smoke and lung cancer in non-smoking women: a multicenter study. *JAMA* 1994; 271:1752-1759. (58.) Davis JR, Brownson RC. A policy for clean indoor air in Missouri: history and lessons learned. *St Louis Univ Public Law Rev.* 1994;13:749-762. (59.) The Health Consequences of Involuntary smoking. A Report of the Surgeon General. Washington, DC: Office on Smoking and Health, Public Health Service, US Dept of Health and Human Services; 1986. Publication DHHS 87-8398. (60.) Barnes DE, Hanauer P, Slade J, Bero LA, Gantz SA. Environmental tobacco smoke: the Brown and Williamson documents. *JAMA*. 1995;274:248-253. (61.) Repace JL. Risk management of passive smoking at work and at home. *St Louis Univ Public Law Rev.* 1994;13:763-785. (62.) Repace JL, Lowrey AH. Issues and answers concerning passive smoking in the workplace: rebutting tobacco industry arguments. *Tobacco Control*. 1992;1:208-219. (63.) Pierce JP, Shanks TG, Pertschuk M, et al. Do smoking ordinances protect non-smokers from environmental tobacco smoke at work? *Tobacco Control*. 1994;3:15-20. (64.) Li CQ, Windsor RA, Lowe JB, Goldenberg RL. Evaluation of the impact of dissemination of smoking cessation methods on the low birthweight rate and on health care costs: achieving year 2000 objectives for the nation. *Am J Prev Med*. 1992;8:171-177. (65.) Lefcoe NM, Ashley MJ, Pederson LL, Keays JJ. The health risks of passive smoking: the growing case for control measures in enclosed environments. *Chest*. 1983;84:90-95. (66.) Eliopoulos C, Klein J, Phan MK, et al. Hair concentrations of nicotine and cotinine in women and their newborn infants. *JAMA*. 1994;271:621-623. (67.) American Academy of Pediatrics Committee on Substance Abuse. Tobacco-free environment: an imperative for the health of children and adolescents. *Pediatrics*. 1994;93:866-868. (68.) Cotton P. Smoking cigarettes may do developing fetus more harm than ingesting cocaine, some experts say. *JAMA*. 1994;271:576-577. (69.) Cnattingius S, Forman MR, Berendes HW, Graubard BI, Isotalo L. Effect of age, parity, and smoking on pregnancy outcome: a population-based study. *Am J Obstet Gynecol*. 1993;168:16-21. (70.) Floyd RL, Rimer BK, Giovino GA, Mullen PD, Sullivan SE. A review of smoking in pregnancy: effects on pregnancy outcomes and cessation efforts. *Annu Rev Public Health*. 1993;14:379-411. (71.) Cnattingius S, Haglund B, Meirik O. Cigarette smoking as risk factor for late fetal and early neonatal death. *BMJ*. 1988;297:258-261. (72.) Cnattingius S, Axelsson O, Eklund G, Lindmark G. Smoking, maternal age, and fetal growth. *Obstet Gynecol*. 1985;66:449-452. (73.) Sexton M, Hebel JR. A clinical trial of change in maternal smoking and its effect on birth weight. *JAMA*. 1984;251:911-915. (74.) Rogers EM. *Diffusion of Innovation*. 3rd ed. New York, NY: Free Press; 1983.

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## TEXT:

EXPOSURE to environmental tobacco smoke (ETS) has been associated with acute and chronic health effects among nonsmokers. These effects include lung cancer, asthma, increased incidence of respiratory infections, decreased pulmonary function, and cardiovascular disease.(1-6) Exposure to ETS may occur in the home, in the workplace, in social settings, and in public places. Data on the extent of exposure to ETS in the US population provide prevalence information for risk assessment and public health prevention strategies, identify population subgroups at increased risk for exposure to ETS, and provide baseline exposure levels that can be compared with future US population levels to evaluate the effectiveness of interventions aimed at reducing ETS exposure. Nevertheless, data are scarce with which to estimate the prevalence of ETS exposure in the US population and in population subgroups, such as children.

In the first phase of the Third National Health and Nutrition Examination Survey (NHANES III), examination and interview data were collected from October 25, 1988, to October 21, 1991, for a representative sample of the civilian, noninstitutionalized US population. The NHANES III included questions on tobacco use and on exposure to ETS at home and at work, as well as measurements of serum cotinine levels. Cotinine measurements in serum, urine, and saliva are commonly used as a measure of exposure to tobacco smoke.(7-29) Cotinine is the major metabolite of nicotine and has a half-life of about 16 to 20 hours.(11,29) Serum cotinine level reflects exposure to nicotine largely from the previous 1 to 2 days. We measured serum cotinine levels in NHANES III by means of a new analytic method based on liquid chromatography atmospheric-pressure chemical ionization tandem mass spectrometry.(10)

This study assessed the extent of exposure to ETS in the US population. Data from NHANES III were analyzed to estimate the prevalence of reported ETS exposure at home and at work and to describe the determinants of serum cotinine levels among non-tobacco users in a representative national sample.

## SUBJECTS AND METHODS

## Study Population and Sample Design

Phase 1 of NHANES III was conducted from 1988 to 1991 by the National Center for Health Statistics of the Centers for Disease Control and Prevention, Atlanta, Ga.(11,12) The survey was designed to examine a nationally representative sample of the US civilian noninstitutionalized population based on a complex, stratified, multistage probability cluster sampling design. The protocol included a home interview followed by a physical examination in a mobile examination center. The study was approved by the National Center for Health Statistics Institutional Review Board.

Race/ethnicity based on self-report was categorized as non-hispanic

white, non-hispanic black, Mexican American, or other. Age at the time of the interview was categorized as 2 months to 3 years, 4 to 11 years, 12 to 16 years, 17 to 19 years, 20 to 29 years, 30 to 39 years, 40 to 49 years, 50 to 59 years, 60 to 69 years, or 70 or more years. Educational level for adults was categorized as less than 12, 12, or greater than 12 completed years of schooling. Region based on the US census definitions was categorized as northeast, central, south, or west. Marital status was categorized as single, married (including living as married), or previously married (widowed, divorced, or separated). Urbanization, based on US census definitions of central city and standard metropolitan statistical area, was categorized as standard metropolitan statistical area-central city, standard metropolitan statistical area-non-central city, or nonstandard metropolitan statistical area. Adults who reported that they currently held a job or had a business were considered to be current members of the workforce. Alcohol consumption was based on self-report. Number of drinks per week was used as a continuous variable.

Serum cotinine was measured for persons aged 4 years and older in NHANES III. A total of 16919 persons aged 4 years and older were selected and eligible to participate in the first phase of NHANES III. Of those selected, 14 269 (84.3%) were interviewed; of those interviewed, 12678 (88.6%) were examined, and of those examined, 10 642 (83.9%) had serum cotinine measurements taken, for an overall response rate of 62.9% (10 642/16 919).

Reported data on ETS exposure in the home were available for 3185 children aged 2 months to 3 years, 3011 children aged 4 to 11 years, and 878 adolescents aged 12 to 16 years. Among adults aged 17 years and older, 9744 had information on tobacco use and ETS exposure at home or work. Of respondents with complete information on tobacco use and ETS exposure, serum cotinine measurements were available for 1793 children aged 4 to 11 years, 737 adolescents aged 12 to 16 years, and 7740 adults aged 17 years and older.

We analyzed the possibility of bias in mean serum cotinine levels of non-tobacco users resulting from nonresponse according to a method used in other NHANES surveys.<sup>(33,34)</sup> The analysis considered major demographic characteristics (sex, race/ethnicity, urban status, region, marital status, education) and other related variables (alcohol consumption, number of smokers in the home, hours exposed to ETS at work). No bias in mean cotinine levels resulting from a differential in response rates was found.

#### Reported Tobacco Use and ETS Exposure

Respondents aged 17 years and older were questioned about tobacco use on 2 separate occasions. As part of an interview conducted in the household, respondents aged 17 years and older, who reported that they had smoked at least 100 cigarettes in their lifetime, were asked whether they currently smoked cigarettes. Respondents were also asked whether they currently used other forms of tobacco (cigars, pipes, snuff, or chewing tobacco). A second, private interview was conducted during the examination in the mobile examination center, which usually occurred 2 to 3 weeks after the household interview. In this interview, all respondents, including those who had not reported any tobacco use in the household interview, were questioned about their use of cigarettes, cigars, pipes, snuff, chewing tobacco, and nicotine gum during the past 5 days. Respondents aged 8 to 16 years were questioned about tobacco use only in the mobile examination center. Respondents younger than 8 years were not asked about tobacco use.

Reported exposure to ETS at home and at work was defined on the basis of the following questions. For each household participating in the survey, 1 member of the household was asked whether any of the household members

smoked cigarettes in the home, and if so, how many cigarettes per day were smoked in the home. If any household member smoked, then each member of that household was classified as being exposed to ETS at home. Adults aged 17 years and older who reported having a job or business were asked how many hours per day they were close enough to tobacco smoke at work so that they could smell the smoke. No questions were asked about smoking by visitors to the home or about exposure to ETS in other settings, such as at social gatherings or in public places.

During the examination, trained dietary interviewers collected detailed information about dietary intake on the previous day for all participants using the 24-hour recall method, in which the respondent is asked to recall and quantify all items of food and drink ingested on the day before the examination. Information was extracted from the dietary database on the weight (in grams) of potatoes, tomatoes, eggplant, cauliflower, and green peppers, either as separate items or as ingredients in mixed dishes, and on the quantity of iced tea and brewed tea consumed. These foods are those previously reported in at least 1 study to have measurable levels of nicotine.(30,35-37)

#### Serum Cotinine Measurements

During the examination in the mobile examination center, blood samples were drawn for serum cotinine analysis. The analytic method, which used high-performance liquid chromatography atmospheric-pressure chemical ionization tandem mass spectrometry, is described elsewhere.(38) Briefly, serum samples are equilibrated with a methyl-(D.sub.3) cotinine internal standard, deproteinized, basified, and extracted with methylene chloride. The final extracts are concentrated, injected on to a 3-(mu)m C18 column, and eluted isocratically with methanol-ammonium acetate as the mobile phase. The eluant is monitored by atmospheric-pressure chemical ionization tandem mass spectrometry, and the M/z 80 daughter ion from the m/z 177 pseudomolecular ion is quantitated, along with additional ions for the internal standard and for confirmation. The accuracy base for the cotinine measurements was a cotinine perchlorate standard obtained from the National Institute of Standards and Technology, Gaithersburg, Md. The limit of detection for this cotinine analytic method is 0.050 ng/mL, calculated at the 3 sigma level by standard methods.(39-40)

#### Data Analysis and Statistical Methods

For univariate analyses, we calculated geometric mean values of serum cotinine for non-tobacco users by age, sex, race/ethnicity, number of smokers in the house, number of hours exposed at work, and exposure categories. Multiple regression analysis included forward and backward stepwise variable selection procedures as well as separately constructed models that included variables expected to be significantly associated with ETS exposure. Separate regression analyses were performed for age groups 4 to 11 years, 12 to 16 years, and 17 years and older. Serum cotinine was log-transformed to reduce the skewness in its distribution. To exclude cotinine levels that may have been the result of active smoking, univariate and regression analyses included only respondents who reported no tobacco use and whose serum cotinine levels were less than or equal to 15 ng/mL. Analyses were repeated with a serum cotinine cutoff of 10 ng/mL, with minimal difference in results (not shown).

The dependent variables in the regression models can be classified into 3 groups: reported ETS exposure variables (number of smokers in the home, number of hours exposed at work), socio-demographic and behavioral variables (age, gender, race/ethnicity, urbanization, geographic region, household size, number of rooms in the home, educational level, marital status, alcohol consumption), and dietary variables (reported consumption



of tomatoes, potatoes, eggplant, cauliflower, green peppers, instant tea, and brewed tea). Socio-demographic and behavioral variables were included as indicators of lifestyles that may have different levels of ETS exposure in contexts that were not represented by the home and work ETS exposure variables. Hours exposed at work, educational level, marital status, and alcohol consumption were available only for adults aged 17 years and older.

To get an approximate estimate of the mean effect of diet on serum cotinine levels, the full regression models for each age group, including all variables regardless of statistical significance, were used. We set the diet variables equal to zero if nonmissing and used the coefficients from the full model to score the resulting data set, and calculate a predicted value for each individual (predicted as if they had eaten none of these foods). The estimated geometric mean contribution of diet was calculated as the difference between geometric means of the measured cotinine levels and the cotinine levels predicted by zeroing out the dietary variables.

Statistical analyses were carried out using SAS<sup>(41)</sup> and SUDAAN.<sup>(42)</sup> All analyses incorporated sampling weights that adjusted for unequal probabilities of selection. Serum cotinine levels less than the limit of detection were assigned a level of half the limit of detection for parametric estimates. Standard errors were calculated using SUDAAN, a program that adjusted for the complex sample design for calculating variance estimates. Based on the number of strata in the sample, 95% confidence intervals (CIs) were constructed by means of a t statistic with 23 df.

## RESULTS

### Reported Exposure to ETS at Home and Work

The estimated prevalences of reported ETS exposure at home and of reported tobacco use for children and adolescents aged 2 months to 6 years in the US population are given in Table 1. Within each age group, the proportion with reported ETS exposure was slightly higher for females than males. The prevalence of non-tobacco users with ETS exposure was lower among adolescents. For ages 2 months to 11 years, the prevalence of reported ETS exposure at home was 43%.

(TABULAR DATA 1 OMITTED)

The estimated prevalences of reported ETS exposure at home or at work and of reported tobacco use are given in Table 2 by age and sex for adults aged 17 years and older in the US population. Of adult non-tobacco users, 37.4% reported exposure to ETS at home or at work, with the percentage of males (43.5%) being somewhat higher than that of females (32.9%). The prevalence of reported ETS exposure among non-tobacco users was 36.9% for non-hispanic blacks, 37.4% for non-hispanic whites, and 35.1% for Mexican Americans. Of working adults who were non-tobacco users, 47.7% reported exposure to ETS at home or at work. For non-tobacco users who were exposed to ETS at work, the mean duration of exposure was 4.4 hours.

(TABULAR DATA 2 OMITTED)

Some characteristics of household exposure to ETS among non-tobacco users are given by age group in Table 3. This table shows smoking by household members only. Of those exposed to smoke in their homes, most had only 1 household member who smoked in the home. Only 4.7% of persons exposed to ETS at home had more than 2 smokers in the household.

(TABULAR DATA 3 OMITTED)

### Univariate Analyses of Serum Cotinine Levels Among Non-tobacco Users

A plot of the distribution of serum cotinine levels on a log scale for all respondents aged 4 years and older is shown in Figure 1. The distribution on a log scale was bimodal, with a separation between 2 peaks at a serum cotinine level of approximately 10 to 15 ng/mL. Serum cotinine

results are shown separately in Figure 2 for 3 groups on the basis of self-reported tobacco use and exposure: (1) non-tobacco users with no home or work ETS exposure, (2) nontobacco users with home or work ETS exposure, and (3) tobacco users. The distributions of cotinine levels for non-tobacco users and tobacco users showed little overlap. Among non-tobacco users, those who reported exposure tended to have higher levels of serum cotinine than did those with no reported exposure. Of persons who reported they were non-tobacco users, 87.9% had detectable levels of cotinine in their serum. Of tobacco users and non-tobacco users considered together, 91.7% had detectable levels of cotinine.

Geometric mean serum cotinine levels with CIs are given in Table 4 for population groups categorized by home and work exposure, age, and working status. Number of smokers in the home and number of hours exposed at work were significantly and positively related to serum cotinine levels. Within each of the 3 age groups, cotinine levels were higher in persons with reported home ETS exposure than in those with no reported home or work ETS exposure. In working adults, cotinine levels were highest in the home and work exposure group, followed by home exposure only, work exposure only, and no home or work exposure. Among age groups, the serum cotinine levels were similar in the category of no home or work exposure but tended to decline in the home exposure category as age increased.

(TABULAR DATA 4 OMITTED)

Geometric mean serum cotinine levels among non-tobacco users decreased with increasing age: 4 to 11 years, 0.297 ng/mL (95% CI, 0.241-0.367 ng/mL); 12 to 16 years, 0.248 ng/mL (95% CI, 0.191-0.322 ng/mL); and 17 years and older, 0.205 ng/mL (95% CI, 0.180-0.233 ng/mL). Overall, levels for females (0.193 ng/mL; 95% CI, 0.166-0.223 ng/mL) were lower than for males (0.261 ng/mL; 95% CI, 0.228 to 0.299 ng/mL). Non-Hispanic blacks had higher cotinine levels (0.408 ng/mL; 95% CI, 0.322-0.517 ng/mL) than non-hispanic whites (0.207 ng/mL; 95% CI, 0.180-0.239 ng/mL) or Mexican Americans (0.163 ng/mL; 95% CI, 0.130-0.239 ng/mL). These variations in mean serum cotinine levels among non-tobacco users by age, gender, and race-ethnic group were similar to the patterns of variation in the prevalence of reported ETS exposure among non-tobacco users.

#### Multivariate Analyses of Serum Cotinine Levels Among Non-tobacco Users

Multiple regression models were used to estimate the effects of reported home and work exposure on serum cotinine levels in non-tobacco users after adjusting for sociodemographic and behavioral variables and for dietary intake. We also used multiple regression to examine the association of cotinine levels with consumption of food previously reported to contain trace levels of nicotine. Regression results from the final models are given by age group in Table 5.

(TABULAR DATA 5 OMITTED)

Exposures to ETS at home and at work were significantly and consistently associated with serum cotinine levels and accounted for most of the explained variance in the regression models. Some sociodemographic and behavioral variables were also significantly associated with serum cotinine levels. None of the dietary factors was consistently associated with serum cotinine levels across the 3 age groups. Amount of bell peppers consumed was significant for children only, and amount of potatoes consumed was significant for adolescents only. None of the foods was significant in the regression for adults. Comparisons of models with and without the dietary variables showed that the group of dietary variables explained less than 2% of the variance of serum cotinine level. Within each age group, the estimated geometric mean contribution of dietary intake to serum cotinine level, based on the regression models, was less than 0.020 ng/mL.

## COMMENT

Exposure to ETS has been identified as a health hazard for adults and children. Data from NHANES III (1988-1991) provide the first opportunity to estimate the extent of exposure to ETS in the US population on the basis of questionnaire data and of serum cotinine measurements in a large representative national sample. The questionnaire data from NHANES III showed that 43% of US children are exposed to smoking by household members. Of the adult non-tobacco-using population, 37% reported home or work exposure to ETS. Serum cotinine measurements showed even more widespread exposure to nicotine in the population. Of persons who were non-tobacco users, 87.9% had detectable levels of cotinine. The most likely source of these detectable levels of cotinine is exposure to ETS. As discussed further below, any contributions of underreporting of smoking status or of dietary nicotine seem to be minimal. Thus, the NHANES III data indicate widespread exposure to ETS in the US population.

The findings from NHANES III are generally consistent with findings from other, more limited studies. Although differences in methods and differences in detection limits preclude detailed comparisons, the NHANES III serum cotinine data for nonsmokers are consistent with the findings of several other large population studies in which serum cotinine has been measured. In the CARDIA study, the median serum cotinine level for 3300 nonsmoking US young adults aged 18 to 30 years was below the limit of detection (2.0 ng/mL) of their analytic method.<sup>(8)</sup> The median level of cotinine for non-tobacco users in NHANES III, for which the detection limit was 0.050 ng/mL, was also below 2.0 ng/mL. In the Scottish Heart Health study, serum cotinine levels of 1870 men and 2265 women aged 40 to 59 years were compared with self-reported perception of ETS exposure, categorized as "none," "a little," "some," and "a lot."<sup>(19)</sup> Median levels in these categories for nonsmoking men were 0.5 ng/mL in the "a little" category and 1.9 ng/mL in the "some" category; the corresponding values for women were at the detection limit in the "a little" category and 0.7 ng/mL in the "some" category. The median cotinine level for adults in NHANES III who reported any ETS exposure at home or work was 0.526 ng/mL, a level between the median values for the exposure categories "a little" and "some."

Measurements of serum cotinine supported the validity of the reports of ETS exposure in NHANES III. In every age group, those with reported ETS exposure showed higher levels of serum cotinine than those with no reported ETS exposure. In multiple regression models, reported exposure was highly significantly associated with serum cotinine levels even after adjusting for age, sociodemographic factors, behavioral variables, and dietary intake. A high percentage of the variance in serum cotinine levels among non-tobacco users was explained by reported ETS exposure.

Most of the non-tobacco-using population, including those who reported no exposure to ETS at work or from smoking by household members, had detectable levels of serum cotinine, indicating even more widespread exposure to nicotine than reflected by the questionnaire data. It is unlikely that the finding of widespread exposure to nicotine among non-tobacco users resulted from underreporting of tobacco use. The proportion of persons who reported no tobacco use but had serum cotinine levels above 15 ng/mL was small (only 1.3% for adults and 2.6% for adolescents), suggesting that underreporting of tobacco use would have minimal effect on the results.

It is also unlikely that the finding of widespread exposure to nicotine among non-tobacco users resulted from dietary nicotine. In other reports, the effects of diet on serum and urine cotinine levels have been predicted by modeling of some food nicotine measurements and assumptions

about ingestion, uptake, and excretion of cotinine. The modeling methods, assumptions, and results are subjects of disagreement.(35,36,43,44) The NHANES III data analysis examined the relationship of dietary consumption of these food items to measured cotinine levels rather than cotinine levels predicted by models.

Multiple regression models showed no consistent associations between serum cotinine levels and consumption of any of the foods that are reported in the literature to contain trace levels of nicotine. Because this estimate was made with the use of many positive nonsignificant terms in the model, it is likely to be biased upward and to overestimate the mean dietary contribution. Thus, the NHANES III data indicate that the dietary contribution to serum cotinine, if any, is extremely small and the widespread exposure to nicotine in the US population is unlikely to result from dietary intake of nicotine.

The most likely source of the widespread nicotine exposure reflected in serum cotinine levels is ETS exposure from reported home and work exposures as well as exposures to ETS not captured by the questions on home and work exposure. The questionnaire data did not address all possible sources of ETS exposure. Questions were asked about household members who smoked in the home, but not about smoking by guests and visitors to the household. No questions were asked about exposure to ETS in public places, in social settings, during transportation, or in other nonwork, nonhome locations, and no questions were asked about recent ETS exposure in general. In addition, respondents may not be aware of some ETS exposure that may have occurred at home or work.

#### Serum Cotinine Levels

Cotinine levels in non-tobacco users varied by age, race/ethnicity, sex, and other sociodemographic and behavioral characteristics. Cotinine levels were generally higher among children than among adults, among non-hispanic blacks than among non-Hispanic whites and Mexican Americans, and among males than among females. The race/ethnicity differences observed in the univariate analyses persisted in the multivariate analyses for children and adults but not for adolescents. In the CARDIA study of young adults, nonsmoking blacks were also found to have higher cotinine levels than nonsmoking whites, although in that study the difference did not persist after adjustment for self-reported ETS exposure.(8) In a study of 38 children,(45) black children were found to have higher serum cotinine levels than white children, and this difference persisted after adjustment for number of smokers in the household. Recent data(23) suggest that blacks metabolize cotinine more slowly than whites, which could also help account for higher levels among blacks.

Cotinine levels were higher among males than among females only for adults aged 17 years and older. These findings are consistent with what has been found in at least 2 previous studies.(8,18) Male sex may be a surrogate for sources of ETS exposure that are not captured by responses to questions on home and work exposures. Such sources of ETS exposure could include social settings, restaurants, visitors who smoke in the home, and exposure during transportation. It is also possible that men may metabolize or excrete cotinine differently than women, although this second possibility seems unlikely, since male children and male adolescents did not have higher cotinine levels than females after adjustment for self-reported home and work ETS exposure.

The study indicates that behavioral and sociodemographic variables were also significantly associated with serum cotinine levels. The number of rooms in the house was negatively related to cotinine level in all 3 age groups, which may reflect the increased likelihood of exposure because of

restricted space in smaller homes or may be a marker for socioeconomic status. Regional differences observed may be the result of differences in smoking prevalence or variations in regulations regarding smoking at work or in public. For adults, serum cotinine levels decreased with increasing years of education, a finding that has been noted by others.(8) Marital status classified as separated, widowed, or divorced was associated with higher levels of cotinine, and increased beer drinking per month was positively associated with cotinine levels. These 2 characteristics may be related to increased opportunity for ETS exposure outside of the home.

#### ETS Exposure at Home and Work

The prevalence of reported exposure to ETS at home was higher among children than among adult non-tobacco users, confirming the importance of smoking in the home in determining the extent to which children involuntarily inhale the tobacco smoke of others. More than 40% of children aged 4 to 11 years reported home ETS exposure. This finding is similar to what has been reported among children in other communities in the United States. For example, the 1988 National Health Interview Survey data showed that 42.5% of children aged 5 years and younger were exposed to a smoker in their households.(46)

Various studies have documented nicotine levels at home and in the workplace. Nicotine levels ranging from 1 to 10.3 mg/(m.sup.3) have been measured in indoor public places.(47) Home levels(48) have been measured between 7.61 and 14.60 (mu)g/(m.sup.3), and levels in 4 cars were measured between 7.73 and 83.13 (mu)g/(m.sup.3). A median nicotine concentration of 8.6 (mu)g/(mu.sup.3) was found in open offices at worksites that allowed smoking.(49)

More than 23% of the US population of adults aged 17 years and older reported home or work ETS exposure. Among adult non-tobacco users, the prevalence of reported exposure to ETS at work was greater than that of the prevalence of reported exposure to ETS at home. In the California Activity Pattern Survey (1987-1988), researchers found that time spent at work was highly correlated with ETS exposure.(50) Additional studies have indicated that the workplace is a major source of ETS exposure, especially among nonsmokers who are not exposed at home.(21,51) In our study, the prevalence of reported exposure at work was higher than the prevalence of reported exposure at home. Serum cotinine levels were higher in those with reported ETS exposure at home only than in those with reported ETS exposure at work only. The highest cotinine levels among non-tobacco users were found in those who reported home and work exposure.

The regression models showed that the number of smokers in the home and number of hours exposed to ETS in the workplace were both significant, accounting for most of the explained variance in serum cotinine in each model. This finding is consistent with other studies.(7,21)

#### Strengths and Limitations of This Study

These data come from a large national sample of individuals who are representative of the US civilian noninstitutionalized population. We measured serum cotinine by a highly sensitive analytic method with the lowest limit of detection reported to date in the literature (0.050 ng/mL). One limitation of this study is that it depends in part on self-reported tobacco use, which may be underreported. However, comparisons of serum cotinine data with self-reported tobacco use suggested that underreporting was minimal. The use of the number of smokers in the household as an indicator of ETS exposure at home does not account for other factors that influence ETS exposure at home, such as room ventilation, duration of exposure, and proximity to smokers. Nevertheless, regression results showed the number of smokers in the household to be a strong predictor of serum

cotinine levels. Another limitation is that questions did not cover all sources of possible ETS exposure. Dietary data were collected using a 24-hour recall of foods eaten the previous day rather than during the previous several days, which might more completely reflect dietary intake.

#### Public Health implications

The NHANES III data indicate widespread exposure to ETS in the population. Exposure to ETS has been associated with increased risk for lung cancer and cardiovascular disease among adults and with impaired lung function and respiratory problems among children. Many of these studies are based on reported exposure rather than on measured serum cotinine levels. The NHANES III data suggest that there may be considerable exposure even within the comparison groups in studies of the effects of ETS. If so, these studies may underestimate risk from ETS exposure.

These cotinine levels reflect the amount of exposure to tobacco smoke and its toxic constituents. Further research is needed to define better the degree of health risk associated with specific levels of serum cotinine.

The bimodal cotinine distribution in Figure 1 provides a biochemical characterization of the exposure of the US population to tobacco smoke. Analysis of serum cotinine levels from NHANES III indicates that 91.7% of the US population aged 4 years and older have detectable levels of cotinine, presumably from active smoking or exposure to ETS. The NHANES III serum cotinine measurements provide an objective and quantitative baseline against which serum cotinine measurements in future surveys can be compared, to monitor trends in population exposure to tobacco smoke and to assess the effectiveness of public health actions to reduce smoking and exposure to environmental tobacco smoke.

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(Figures 1-2 ILLUSTRATION OMITTED)

#### References

- (1.) Environmental Protection Agency. Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders. Washington, DC: Environmental Protection Agency, Office of Air and Radiation; 1992. Environmental Protection Agency publication EPA/600/6-90/006F.
- (2.) National Research Council. Environmental Tobacco Smoke: Measuring Exposures and Assessing Health Effects. Washington, DC: National Academy Press; 1986.
- (3.) US Dept of Health and Human Services. The Health Consequences of Involuntary Smoking. A Report of the Surgeon General. Washington DC: US Dept of Health and Human Services, Public Health Service, Office of the Assistant Secretary for Health, Office of Smoking and Health; 1986. US Dept of Health and Human Services publication PHS 87-8398.
- (4.) Fonthain ETH, Correa P, Reynolds P, et al. Environmental tobacco smoke and lung cancer in nonsmoking women: a multicenter study. JAMA. 1994;271:1752-1759.
- (5.) Borland R, Pierce JP, Burns DM, et al. Protection from environmental tobacco smoke in California. JAMA. 1992;268:749-752.
- (6.) Stockwell HG, Goldman AL, Lyman GH, et al. Environmental tobacco smoke and lung cancer risk in nonsmoking women. J Natl Cancer Inst. 1992; 84:1417-1422.
- (7.) Riboli E, Preston-Martin S, Saracci R, et al. Exposure of nonsmoking women to environmental tobacco smoke: a 10-country collaborative study. Cancer Causes Control. 1990;1:243-252.
- (8.) Wagenknecht LE, Manolio TA, Sidney S, et al. Environmental tobacco smoke exposure as determined by cotinine in black and white young adults: the CARDIA Study. Environ Res. 1993;63:39-46.
- (9.) Watts RR, Langone JJ, Knight GJ, Lewtas J. Cotinine analytical workshop report: consideration of analytical methods for determining

cotinine in human body fluids as a measure of passive exposure to tobacco smoke. *Environ Health Perspect.* 1990;84:173-182. (10.) Wall MA, Johnson J, Jacob P, Benowitz NL. Cotinine in the serum, saliva and urine of nonsmokers, passive smokers and active smokers. *Am J Public Health.* 1988;78:699-701. (11.) Jarvis MJ, Russell MAH, Benowitz NL, Feyerabend C. Elimination of cotinine from body fluids: implications for noninvasive measurement of tobacco smoke exposure. *Am J Public Health.* 1988; 78:696-698. (12.) Haley NJ, Axelrod CM, Tilton KA. Validation of self-reported smoking behavior: biochemical analyses of cotinine and thiocyanate. *Am J Public Health.* 1988;73:1204-1207. (13.) Jarvis MJ, Tunstall-Pedoe H, Feyerabend C, Vesey C, Saloojee Y. Biochemical markers of smoke absorption and self-reported exposure to passive smoking. *J Epidemiol Community Health.* 1984; 38:335-339. (14.) Etzel RA. A review of the use of saliva cotinine as a marker of tobacco smoke exposure. *Prev Med.* 1990;19:190-197. (15.) Cummings SR, Richard RJ. Optimum cutoff points for biochemical validation of smoking status. *Am J Public Health.* 1988;78:574-575. (16.) Woodward M, Tunstall-Pedoe H. An iterative technique for identifying smoking deceivers with application to the Scottish Heart Health Study. *Prev Med.* 1992;21:88-97. (17.) Jarvis MJ, Tunstall-Pedoe H, Feyerabend C, Vesey C, Saloojee Y. Comparison of tests used to distinguish smokers from nonsmokers. *Am J Public Health.* 1987;77:1435-1438. (18.) Woodward M, Tunstall-Pedoe H, Smith WCS, Tavendale R. Smoking characteristics and inhalation biochemistry in the Scottish population. *J Clin Epidemiol.* 1991;44:1405-1410. (19.) Tunstall-Pedoe H, Woodward M, Brown CA. Tea drinking, passive smoking, smoking deception and serum cotinine in the Scottish Heart Health Study. *J Clin Epidemiol.* 1991;44:1411-1414. (20.) Emmons KM, Abrams DB, Marshall R, et al. An evaluation of the relationship between self-report and biochemical measures of environmental tobacco smoke exposure. *Prev Med.* 1994;23:35-39. (21.) Cummings KM, Markello SJ, Mahoney M, et al. Measurement of current exposure to environmental tobacco smoke. *Arch Environ Health.* 1990;45: 74-79. (22.) Patrick DL, Cheadle A, Thomson DC, et al. The validity of self-reported smoking: a review and meta-analysis. *Am J Public Health.* 1994;84:1086-1093. (23.) Benowitz NL, Perez-Stable E, Herrera B, Jacob P. African American-Caucasian differences in nicotine and cotinine metabolism. *Clin Pharmacol Ther.* 1995;57:159. (24.) Benowitz NL, Kuyt F, Jacob P, Jones RT, Osman AL. Cotinine disposition and effects. *Clin Pharmacol Ther.* 1983;34:604-611. (25.) Langone JJ, Gjika HB, Van Vunals H. Nicotine and its metabolites: radioimmunoassays for nicotine and cotinine. *Biochemistry.* 1973;12:5025-5030. (26.) Greenberg RA, Haley NJ, Etzel RA, Loda FA. Measuring the exposure of infants to tobacco smoke: nicotine and cotinine in urine and saliva. *N Engl J Med.* 1984;310:1075-1078. (27.) Matsukura S, Taminato T, Kitano N, et al. Effects of environmental tobacco smoke on urinary cotinine excretion in nonsmokers: evidence for passive smoking. *N Engl J Med.* 1984;311:828-832. (28.) Wilcox RG, Hughes J, Roland J. Verification of smoking history in patients after infarction using urinary nicotine and cotinine measurements. *BMJ.* 1979;2:1026-1028. (29.) Benowitz NL, Kuyt F, Jacob P, Jones RT, Osman AL. Cotinine disposition and effects. *Clin Pharmacol Ther.* 1983;34:604-611. (30.) Castro A, Monji N. Dietary nicotine and its significance in studies on tobacco smoking. *Biochem Arch.* 1986;2:91-97. (31.) Ezzati TM, Massey JT, Waksberg J, Chu A, Maurer KR. Sample design: Third National Health and Nutrition Examination Survey. *Vital Health Stat 2.* 1992; No. 113. (32.) National Center for Health Statistics. Plan and operation of the Third National Health and Nutrition Examination Survey, 1988-1994. *Vital Health Stat.* 1994;1 (32). (33.) Forthofer RN. Investigation of nonresponse bias in NHANES II. *Am J*

Epidemiol. 1983;117: 507-515. (34.) Flegal KM, Ezzati TM, Harris MI, et al. Prevalence of diabetes and impaired glucose tolerance and plasma glucose levels in US population aged 20-74 yrs. Diabetes. 1987;36:523-534. (35.) Davis RA, Stiles MF, deBethizy JD, Reynolds JH. Dietary nicotine: a source of urinary cotinine. Food Chem Toxicol. 1991;29:821-827. (36.) Domino EF, Hornback E, Demana T. The nicotine content of common vegetables. N Engl J Med. 1993;329:437. (37.) Sheen SJ. Detection of nicotine in foods and plant materials. J Food Sci. 1988;53:1672-1573. (38.) Bernert JT, Sosnoff C, Tamer V\*E, et al. Development of a rapid and sensitive method for serum cotinine analysis as a marker of exposure to environmental tobacco smoke. Clin Chem. 1994;40: 1075. (39.) Taylor JK. Quality Control of Chemical Measurements. Chelsea, Mich: Lewis Publishers; 1987. (40.) Long GL, Winefordner JD. Limit of detection: a closer look at the IUPAC definition. Anal Chem. 1983;55:712a-719a. (41.) SAS Institute Inc. SAS Language: Reference, Version 6. Cary, NC: SAS Institute Inc; 1990. (42.) Shah BV, Barnwell BG, Hunt PN, Lavange LM. SUDAAN User's Manual, Release 5.50. Research Triangle Park, NC: Research Triangle Institute; 1991. (43.) Repace JL. Won't mislead on passive smoking. . . . BMJ. 1994;308:61. (44.) Jarvis MJ. Unless subjects eat 90 kg tomatoes a day. BMJ. 1994;308:62. (45.) Pattishall EN, Strope GL, Etzel RA, Helms RW, Haley NJ, Denny FW. Serum cotinine as a measure of tobacco smoke exposure in children. AJDC. 1985;139:1101-1104. (46.) Overpeck MD, Moss AJ. Children's exposure to environmental cigarette smoke before and after birth: health of our nation's children, United States, 1988. In: Advance Data From Vital and Health Statistics. Hyattsville, Md: National Center for Health Statistics; 1991:No. 202. (47.) Hammond SK, Sorensen G, Youngstrom R, Ockene JK. Occupational exposure to environmental tobacco smoke. JAMA. 1995;274:956-960. (48.) Hinds WC, First MW. Concentrations of nicotine and tobacco smoke in public places. N Engl J Med. 1975;292:844-845. (49.) Muramatsu M, Umemura S, Okada T, Tomita H. Estimation of personal exposure to tobacco smoke with a newly developed nicotine personal monitor. Environ Res. 1984;35:218-227. (50.) Jenkins PL, Phillips TJ, Mulberg EJ, Rui SP. Activity patterns of Californians: use of and proximity to indoor pollutant sources. Atmos Environ. 1992;26A:2141-2148. (51.) Kabat GC, Wynder EL. Lung cancer in nonsmokers. Cancer. 1984;53:1214-1221.

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Cigarette smoking among adults - United States, 1993. (From the Centers for Disease Control and Prevention)  
JAMA, The Journal of the American Medical Association, v273, n5, p369(2)  
Feb 1, 1995



## TEXT:

THE ANNUAL prevalence of cigarette smoking among adults in the United States declined 40% during 1965-1990 (from 42.4% to 25.5%)[1] but was virtually unchanged during 1990-1992.[2] To determine the prevalence of smoking among adults, smoker interest in quitting, and the prevalence of cessation (i.e., quit ratio) among adults during 1993, the Year 2000 Health Objectives Supplement of the 1993 National Health Interview Survey (NHIS-2000) collected self-reported information about cigarette smoking from a random sample of civilian, non-institutionalized adults aged - 18 years. This report presents the prevalence estimates for 1993 and compares them with estimates from the 1992 Cancer Epidemiology Supplement and presents 1993 estimates for smoker interest in quitting completely and the prevalence of cessation among ever smokers.

The overall response rate for the 1993 NHIS-2000 (n=20860) was 81.2%. For 1993, current smoking status was determined through two questions: "Have you smoked at least 100 cigarettes in your entire life?" and "Do you now smoke cigarettes every day, some days, or not at all?" Ever smokers were persons who reported having smoked at least 100 cigarettes during their entire lives. Current smokers were defined as those who had smoked 100 cigarettes and now smoked either every day (i.e., daily smokers) or some days (i.e., some-day smokers). Former smokers had smoked at least 100 cigarettes in their lives but did not currently smoke. The prevalence of cessation was the percentage of former smokers among ever smokers. Interest in quitting smoking was assessed using answers to the question "Would you like to completely stop smoking cigarettes?" Data were adjusted for nonresponse and weighted to provide national estimates. Confidence intervals (CIs) were calculated using standard errors generated by the Software for Survey Data Analysis (SUDAAN).[3]

Prevalence estimates for 1992 were based on two definitions of current smoking and were calculated by averaging the estimates generated by each definition.[2] One of the 1992 definitions of current smoking (smoking every day or some days) was identical to the definition used in 1993; these estimates are compared in this report.

In 1993, an estimated 46 million (25.0% [95% CI=[+ or -]0.7%]) adults in the United States were current smokers: 20.4% (95% CI=[+ or -]0.7%) were daily smokers, and 4.6% (95% CI=[+ or -]0.3%) were someday smokers. Smoking prevalence was significantly higher among men (27.7% [95% CI=[+ or -]1.1%] [24 million men]) than among women (22.5% [95% CI=[+ or -]0.9%] [22 million women]). The racial/ethnic group-specific prevalence was highest among American Indians/Alaskan Natives (38.7% [95% CI=[+ or -]8.7%]) and lowest among Asians/Pacific Islanders (18.2% [95% CI=[+ or -]4.1%]).

The prevalence of smoking among persons with [less than is equal] 8 years of education was significantly lower than that among persons with 9-15 years of education; however, among persons with [greater than is equal] 9 years of education, prevalences varied inversely with education level. For all groups, the prevalence of smoking was highest among males who had dropped out of high school (42.1% [95% CI=[+ or -]4.4%]). Smoking prevalence was higher among persons living below the poverty level\* (32.1% [95% CI=[+ or -]2.4%]) than among those living at or above the poverty level (23.8% [95% CI=[+ or -]0.8%]).

The prevalence of current smokers in 1993 was unchanged statistically from 1992 (25.0% and 26.3%, respectively). However, the prevalence of daily smoking in 1993 (20.4% [95% CI=[+ or -]0.7%]) was significantly lower than in 1992 (22.3% [95% CI=[+ or -]0.9%]). In addition, prevalence estimates for current smokers during 1993 were lower overall for women, persons with a college education or higher, total persons living at or above the poverty

level, and women living at or above the poverty level.

Of current smokers, an estimated 32 million persons (69.7% 95% CI=[+ or -1.6%]) reported they wanted to quit smoking completely. Women were more likely to report an interest in quitting (72.7% [95% CI=[+ or -1.9%]) than men (67.1% [95% CI=[+ or -2.2%])). Current smokers aged <65 years (49.9% [95% CI=[+ or -5.8%]]) were the least likely to report that they wanted to completely stop smoking.

In 1993, an estimated 46 million adults were former smokers (49.6% [95% CI=[+ or -1.2%]) of ever smokers). The prevalence of cessation was higher among men (51.9% [95% CI=[+ or -1.5%]]), whites (51.6% [95% CI=[+ or -1.3%]]), and persons living at or above the poverty level (52.4% [95% CI=[+ or -1.2%]]), and increased directly with age. Among education levels, the prevalence of cessation was lowest among persons with 9-11 years of education (38.2% [95% CI=[+ or -3.3%]]).

Reported by: Epidemiology Br, Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.

CDC Editorial Note: Although the overall prevalence of current smoking did not change from 1992 to 1993, the prevalence of daily smoking declined during 1993, possibly reflecting the proliferation of restrictive worksite and public smoking policies.[4] In addition, the relatively greater decline among women is consistent with a previous report that, in workplace settings, women may be more likely to quit smoking because of worksite smoking bans.[5] Differences in prevalence among racial/ethnic groups may be influenced by differences in education levels and socioeconomic status, as well as by social and cultural phenomena. For example, in a recent report[6] the prevalence of behavioral risk factors, including cigarette smoking, was generally higher among persons with [less than is equal]12 years of education.

From 1992 to 1993, daily smoking prevalence increased among high school seniors from 17.2% to 19.0%.[1] To be effective, school-based prevention programs should begin in kindergarten and continue through high school. This intervention should be especially intensive in middle school and should be reinforced in high school. CDC has published guidelines for incorporating tobacco-use prevention and cessation strategies in the early grades in schools.[7] School-based programs should provide instruction about the short- and long-term physiologic and social consequences of tobacco use, social influences on tobacco use, peer norms regarding tobacco use, and refusal skills.

The findings in this report are subject to at least two limitations. First, because the 1992 and 1993 estimates are based on data collected during a 6-month period, these estimates may not be representative of annual prevalence. In particular, other data suggest that the restriction of the surveys to these periods may have minimized the true magnitude of declines in prevalence (National Household Survey on Drug Abuse, unpublished data, 1992 and 1993). Second, because these estimates are based on self-reported data, prevalences may be underestimated. However, underreporting is believed to be low in national prevalence surveys.[8]

To sustain the decline in smoking prevalence, efforts must be intensified to discourage initiation and to promote cessation. Although 70% of smokers want to stop smoking and 34% attempt to quit each year, only 2.5% successfully stop smoking each year.[9] The high rate of relapse is a consequence of the effect of nicotine dependence. Smokers who need assistance with stopping can receive self-help materials from local voluntary agencies, CDC (telephone [800] 232-1311 or [404] 488-5705), and the National Institutes of Health (telephone [800] 422-6237). Many smokers are addicted to nicotine and could potentially benefit from nicotine

replacement therapy (NRT); NRT and other cessation assistance can be obtained from physicians and dentists. Information about formal cessation programs can be obtained from local voluntary agencies or health-care providers.

The health risks of cigarette smoking can be eliminated only by quitting; switching to lower "tar" and nicotine cigarettes is not a safe alternative.[1] Comprehensive measures for promoting cessation and reducing the prevalence of smoking include increasing tobacco excise taxes, enforcing minors' access laws, restricting smoking in public places, restricting tobacco advertising and promotion, and conducting counter-advertising campaigns.

References 10 available.

[\*] Poverty statistics are based on a definition originated by the Social Security Administration in 1964, subsequently modified by federal interagency committees in 1969 and 1980, and prescribed by the Office of Management and Budget as the standard to be used by federal agencies for statistical purposes.

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Antitobacco advocates fight 'illegal' diversion of tobacco control money.

(In California) (Medical News & Perspectives)

Skolnick, Andrew A.

JAMA, The Journal of the American Medical Association, v271, n18, p1387(3)  
May 11, 1994

#### TEXT:

BY MOST accounts, political and public health leaders of California should be proudly blowing their horns over the success of the state's widely acclaimed antitobacco campaign, which some are calling "the most successful public health intervention since the invention of sewers."

In 1988, the voters of California overwhelmingly passed Proposition 99 (known as Prop 99), which raised the state cigarette tax 25 cents a pack to fund a comprehensive tobacco control program. Since then, smoking prevalence has fallen nearly three times faster in California than in the rest of the nation. California's Tobacco Control Program is credited with reducing the number of smokers by 1 million and the number of cigarettes smoked by 1.1 billion packs. In addition, the California Department of Health Services estimates that the state saved more than \$386 million in health care costs for treating tobacco-related diseases in 1993 alone.

However, the horns that are blowing--in the state legislature, in the news media, and now in the courts--are those of battle.

Politicians, tobacco control advocates, volunteer health groups, the California Medical Association (CMA), and other groups are fighting an increasingly caustic battle over tobacco tax dollars. That fight, according to a recent report prepared by the Centers for Disease Control and Prevention (CDC), Atlanta, Ga, at the request of the California Department of Health Services, is threatening the existence of the tobacco control program that has become a model for the rest of the nation.

The study, an assessment of programs funded by the Prop 99 Health Education Account, warns that diversion of these funds from antitobacco

programs is endangering "one of the most important public health efforts undertaken by any state." The study states that California's antitobacco campaign "continues to enjoy an overwhelming citizen mandate for tobacco control" but is seriously threatened by "a lack of will on the part of the government to implement it as originally mandated by the voters" and by "the failure of key constituent groups to hold the government fully accountable to the will of the voters."

One of the greatest threats the program faces, the report says, is "the redirection of funding intended for tobacco control to medical services despite the public mandate."

The CDC report blames the tobacco industry for fomenting the "fear and intimidation" that lie behind the lack of political resolve to maintain the antitobacco programs. "The tobacco industry was instrumental in separating antitobacco forces from those who wish to impound funding for much-needed and ever-expanding uncompensated health care," it concludes. "This has been an effective means of weakening the effects of the health education program."

#### Diversions Challenged in Court

On March 23, Americans for Nonsmokers' Rights, Berkeley, Calif, one of the health groups that helped to get Prop 99 passed; another antitobacco group called Just Say No to Tobacco Dough, Fremont, Calif; and a number of California taxpayers, including James Nethery, DDS, who chaired the campaign for Prop 99, filed suit to recover more than \$165 million in tobacco tax revenues that the plaintiffs say has been illegally diverted from tobacco education programs. The lawsuit names as defendants Gov Pete Wilson; Kimberley Belshe, director of the Department of Health Services; Sandra R. Smoley, secretary of the Health and Welfare Agency; Willie Brown, Jr, (D, San Francisco), speaker of the assembly; Bill Lockyer (D, Alameda County), state senate president pro tem; and other state officials.

"We will not stand by and watch the politicians and tobacco industry destroy one of the most effective health programs in the history of this nation," says Mark Pertschuk, codirector of Americans for Nonsmokers' Rights. "Our faith in the ability of [state capital] Sacramento insiders to guard the public trust has run out."

At issue is money from Prop 99's Health Education Account that plaintiffs say has been diverted to pay for medical services for the poor rather than for tobacco control activities as directed by Prop 99.

The proposition requires the tobacco surtax to be placed into six accounts separate from the general fund. Twenty percent is supposed to be used for school-and community-based tobacco education and prevention programs; 45% for the treatment of patients who cannot pay for medical care and who are not covered by any federally funded program; 5% to support research into the causes, treatment, and prevention of tobacco-related diseases; 5% for environmental and fire prevention programs; and 25% into an account from which the legislature can allocate funds to any of the other accounts.

However, citing California's huge budget deficit and the pressing health care needs of the poor, Wilson and the state legislature have been diverting more and more of the Health Education Account funds to pay for uncompensated medical services ever since the program began. According to Stanton A. Glantz, PhD, professor of medicine, University of California-San Francisco, Institute for Health Policy Studies, who is an authority on tobacco policies and politics, the governor's proposed budget for 1994-1995 requests that only 11.7% of Prop 99 revenues be used to fund legitimate tobacco control activities, well below the 20% required by law. "If enacted as proposed, nearly \$36 million of the \$87 million in the Health Education

Account would go for medical services," Glantz says. "The expressed will of the people is being ignored."

#### Media Campaign Restored

This is the second time in 2 years that health groups took California authorities to court to stop the diversion of antitobacco education funds. In January 1992, the American Lung Association of California sued Wilson and then-Director of Health and Human Services Molly J. Coye, MD, MPH, when they tried to divert funds from the state's antismoking mass media campaign. The television and print advertising campaign is considered by many public health authorities to be the most effective component of the Tobacco Control Program. It is also the component that generates the strongest protests from the tobacco industry. In April 1992, a Superior Court judge ruled the diversion illegal and ordered the funding restored (JAMA. 1992; 267:2721-2726).

Nevertheless, the Wilson administration, many state legislators, the CMA, and other groups that want to increase the expenditures for medical services say the current diversions are legal and necessary.

"All the diversions that have happened are consistent with the basic principles of Prop 99," says Shannon Bowman, spokesperson for the California Health and Welfare Agency, Sacramento. "The plaintiffs are arguing that the money we're using to fund the Child Health and Disability Prevention program and the Maternal and Child Health Program is going for direct medical services and not for education. However, those programs include tobacco education components. We argue that they are in fact educational programs and that there is no better education than that which goes on between a doctor and patient. Not only do you reach the child [with this program], you reach the child's parents, and doctors can provide referral services."

Considering that 7 to 8 million Californians are medically underinsured or uninsured, the redirection of money from antitobacco programs to pay for medical services for the poor is a logical and appropriate use of those funds, says Danielle Walters, media manager for the CMA, Sacramento. "The physicians of California are charged with taking care of the citizens of California. The fiscal reality is that money is scarce, and you must do with what you have."

"No one's arguing that these are not important programs that deserve funding," says Glantz. "But this state spends billions on health care and next to nothing on prevention. There are other sources of money that can be tapped for health care for the underserved, but there is no other substantial source of money for antitobacco programs other than what the voters of California provided through Prop 99."

Indeed, the state's Department of Health Services this year will spend more than \$17 billion on health services. By comparison, the \$35.8 million of tobacco education money being fought over seems like pocket change. Glantz says the medical services in question could be funded by eliminating the Governor's Aid to Infants and Mothers program (AIM), as the state's Legislative Analyst's Office is recommending.

AIM is a private prenatal health insurance program primarily for the working poor that was created as an alternative to the Medi-Cal program. Because providers are paid substantially higher reimbursement rates, AIM program patients usually have much easier access to health care than do pregnant women covered by Medi-Cal. Elizabeth G. Hill, the state legislative analyst, says that despite this apparent improvement in care, AIM is not as cost-effective as Medi-Cal and doesn't result in better birth outcomes.

Nevertheless, Wilson is proposing that the general fund expenditure

on the AIM program be increased from \$12.5 million in 1993-1994 to \$38.5 million in 1994-1995. The program also gets \$57.6 million from the Prop 99 Medical Services Account. The Legislative Analyst's Office is not in agreement with the governor. Hill is recommending that the AIM program be abolished and the Medi-Cal program expanded; she also recommends that the \$57.6 million in Prop 99 funds be redirected to other health service programs.

Tobacco control advocates point out that this amount is not only enough to pay for all medical services for which Health Education Account monies are being diverted, it would allow them to expand. The state administration disagrees.

#### Antitobacco Activities Attacked

Despite the success of the Tobacco Control Program in reducing tobacco consumption in California, some of its educational activities have come under fire from legislators, the CMA, and other critics. Activities such as a program to promote smoke-free skiing for teenagers living in ski areas and antitobacco advertising on a race car are being criticized as inappropriate. However, defenders call these attacks "curious." Says Glantz, "Such advertising and promotional activities work for the tobacco companies. The genius of the California Tobacco Control Program is that it beats the tobacco industry at its own game."

Evidence for this statement is contained in a survey of approximately 80 000 Californians conducted by the University of California-San Diego's Cancer Prevention and Control Program. The report, Tobacco Use in California: An Evaluation of the Tobacco Control Program, 1989-1993, contained good and bad news.

Since implementation of the Tobacco Control Program, cigarette consumption in California has declined 27% and smoking prevalence has declined 28% (from an estimated 26.5% in 1988 to 19.1% in 1993). What's more, the largest drop has been among women, blacks, and people with less than a college education--all but one of the groups targeted by Health Education Account programs.

The targeted group that showed least improvement is adolescents. "The introduction of the Joe Camel' advertising campaign in 1988 was associated with a major increase in smoking prevalence among California's adolescents lasting until 1990," the survey found. However, the increase in smoking among adolescents leveled off after the state's celebrated antismoking mass media campaign began.

Despite such clear evidence of the campaign's effectiveness, the report concludes, "As currently implemented [because of the diversions of funds], the Tobacco Control Program will not meet the legislatively set goal of a 75% reduction in smoking prevalence by the year 2000. To achieve this goal, the ineffective interventions must be eliminated and funds directed only to ones that work."

Also under attack is the Prop 99 tobacco research program, which critics say has supported research that has little relevance to tobacco addiction and tobacco-related diseases. In September, Wilson vetoed legislation that would have released \$20.9 million earmarked for approved tobacco research grants, many of which were ongoing projects.

The CMA now is asking the legislature to use these funds for medical services instead of tobacco research. "People who have looked at the research account believe a whole lot of it is contrary to the act--the act specifies medical research, and I suspect that when you look at it, most of it is not medical research," says Steve Thompson, CMA's vice president for government relations. "In no way, from our perspective, would [the diversion of \$20.9 million] retard proposed current tobacco research

efforts."

#### Another Disagreement

That's not true, says Charles L. Gruder, PhD, director of the Tobacco-Related Disease Research Program, University of California Office of the President, Oakland. "Many of the scientists whose grants were approved got temporary support from their institutions on the assumption that the legislature would finally make the funds available," he says.

"Some researchers have told us that if they don't get the money soon they will have to abandon their projects and go into other research."

One such researcher is Lisa Bero, PhD, adjunct assistant professor of health policy, Institute for Health Policy Studies, University of California-San Francisco. "If the CMA is successful in diverting funds that were earmarked for approved research grants, it will not only drive tobacco control researchers out of this field, it will discourage others from entering," she says.

Bero was the lead author of a study of tobacco industry-sponsored symposia on environmental tobacco smoke, which was published in The Journal's latest tobacco theme issue (JAMA, 1994;271:612-617). Of the seven studies in this issue, three—including the two that received widespread coverage by the news media—were supported by funds from the Prop 99 research account.

The legislature now is also considering recommendations that the tobacco research account be reduced from 5% of the tobacco surtax revenues mandated by Prop 99 to 3% or even 2%.

#### Anger Toward the CMA

"Considering that tobacco use is the single most important cause of disability and premature death throughout the state and the country, it is surprising and disappointing that the main physician organization in California should be standing in the way of a program that has proven itself so effective in stopping tobacco use," says John W. Farquhar, MD, professor of medicine and director, Stanford Center for Research in Disease Prevention, Stanford (Calif) University School of Medicine.

Last year, tobacco control advocates in California were outraged when Wilson appointed Kimberly Belshe director of the Department of Health Services, which administers Prop 99 antismoking education programs. In 1988, Belshe had led the tobacco industry's campaign to defeat Prop 99 in southern California. The CMA supported her appointment.

From the beginning, the CMA has been opposed to Prop 99's antitobacco education programs, say Pertschuk and other tobacco control advocates. In a letter to State Sen Robert Presley dated July 14, 1989, William G. Plested III, MD, then-president of the association, argued against spending tobacco tax revenues on antitobacco education. He claimed scientific studies show advertising campaigns are not cost-effective in altering people's lifestyles and health habits.

"The general public already knows the adverse health consequences of smoking," he wrote. "Pouring vast sums of money into new educational structures or new channels of communication would be an adventuresome experiment which holds little promise for cost-effective results."

#### Allegations Are Appalling

"To allege that we're somehow in bed with the tobacco industry is appalling to me," adds Thompson. "How can anybody accuse us of being on the side of tobacco when we were the organization that was responsible for the 2-cent increase in tobacco tax enacted last year to pay for breast cancer research, when it was the CMA that got the [ban on smoking in the workplace and public places] bill as far as it has, when it was this organization that was almost solely responsible for the ban on the distribution of

tobacco samples? Nobody should ever question our integrity. To describe this disagreement over services and education as our being on the side of tobacco is not only incorrect but dishonest and highly offensive." What's more, says Thompson, the tobacco industry has taken absolutely no position on how Prop 99 money should be distributed. "If the tobacco industry has an agenda on this, it's either a hidden agenda or nobody knows anything about it," he says.

Walker Merryman, vice president of the Tobacco Institute, Washington, DC, agrees. "We haven't been trying to influence Prop 99 expenditures," he says. "We've stayed completely away from that from the very beginning."

However, according to an authority on the tobacco industry's lobbying efforts in California, in 1985-1986, the year before Prop 99 was proposed, the industry gave California legislators and candidates \$288 000 and spent \$337 000 on lobbying. "But in 1989-1990, the year when AB99 [Prop 99 implementation legislation] was being drafted, the industry spent \$572 000 on legislators and candidates and almost \$3.1 million on lobbying," says Michael Begay, PhD who is an assistant researcher at the Institute for Health Policy Studies, University of California-San Francisco, and assistant professor of health policy and management at the School of Public Health, University of Massachusetts, Amherst. The industry had previously spent nearly \$22 million in its failed attempt to defeat Prop 99, according to Begay and others.

What's more, contrary to what the Tobacco Institute says, lobbying reports required by California law show that the institute, Philip Morris, and RJR Nabisco all reported lobbying on the last two Prop 99 reauthorization bills.

What amount of money, if any, the tobacco industry is spending to influence current reauthorization legislation is unknown. Last year, the industry spent nearly \$3 million on political contributions, lobbying and other political activities in California, says Begay. Tobacco Institute spokesperson Thomas Lauria says that the industry in California is lobbying only against legislation that seeks to impose total smoking bans in work and public places.

California Speaker of the Assembly Brown also says the tobacco industry is not trying to influence Prop 99 legislation. In a recent National Public Radio report by Rebecca Perl, he said, "I don't think that persons who donate money are attempting to buy anything, and if they are, they've committed a crime, period."

Brown, who is a defendant in the current lawsuit against the diversion of antitobacco education funds, has received a total of more than \$470 000 in contributions from the tobacco industry. According to Americans for Nonsmokers' Rights and Just Say No to Tobacco Dough, that is four times more than any member of the US Congress has received. They also report that Governor Wilson has received \$27500 in contributions from the tobacco industry, and Lockyer has received \$36 500.

On average, members of the California legislature in the last election received more than \$10 000 each in tobacco industry contributions, which is more than twice the average amount that federal politicians received, says Glantz, who adds: "But all these contributions totaled is chicken feed compared with the \$415 million in profits the industry has lost thanks to Prop 99. And they stand to lose far, far more if the California model is adopted in other states, as it has been in Massachusetts and as is being considered in Arizona, Colorado, and other states."

Lobby for the Disease Agent'

"Although tobacco kills nearly 500 000 Americans every year, the



federal government spends only about \$100 million a year on tobacco control," says Glantz. "Yet it spends \$12 billion to fight illicit drug use, which is responsible for only 10 000 to 20 000 deaths a year."

"The rest of the country is looking toward California as a bellwether of tobacco control efforts," says Matthew G. Madonna, executive vice president of the Arizona division of the American Cancer Society, and a leader of Arizona's tobacco excise tax initiative campaign. "If the money in California does not stay in antismoking education, where voters intended, it may stop other states from considering this sort of measure."

The CDC's report on Prop 99 health education programs echoes these concerns and warns of a problem that it says is unique to tobacco disease prevention: "a lobby for the disease agent." The tobacco industry has been able to create an "atmosphere of embattlement," the report says. "No other public health problem has such an effective, well-funded adversary. There is no HIV industry ... no prosyphilis lobby. There is, however, a protobacco lobby whose contributions to state and local politics in California have increased tenfold since 1985."

Blake Cady, MD, professor of surgery, Harvard Medical School, Boston, Mass, and chair of Massachusetts' Tobacco Control Oversight Council, which oversees Massachusetts' version of Prop 99, says that the ongoing efforts to "emasculate California's antismoking programs should put us all on notice that the tobacco industry is still a very deadly enemy, deadly for the public and deadly for the political programs aimed at controlling tobacco use."

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Trends in cigarette smoking among US physicians and nurses.  
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#### TEXT:

PHYSICIANS and nurses are important models and educators for appropriate health behavior.[1-3] Cigarette smoking by persons in these occupations, however, undermines both of these roles.[1,4-12] Although there have been several surveys measuring cigarette smoking prevalence among physicians and nurses over the past three decades,[4-6,13-16] the last population-based, nationally representative data on these workers are from 1978 through 1980.[17,18] To our knowledge, trends in smoking among physicians and nurses have not been reported. We analyzed National Health Interview Survey (NHIS) data to determine trends in cigarette smoking among physicians, registered nurses, and licensed practical nurses.

#### Methods

Detailed descriptions of the methods used in the NHIS have been extensively described elsewhere.[19,10] Briefly, the NHIS is a household interview survey of adults who are selected using a complex, multistage probability sample of the civilian, noninstitutionalized adult population of the United States. In general, the overall response rate to the special health topics included in the surveys averages around 85% to 90%, and in

recent years, about 43 000 persons participated annually.[19,20] Because proxy responses to questions on the NHIS were allowed prior to 1974, we only analyzed data from 1974 through 1991; questions about smoking prevalence were asked on the 1974, 1976, 1977, 1978, 1979, 1980, 1983, 1985, 1987, 1988, 1990, and 1991 NHISs.

Since relatively small numbers of physicians and licensed practical nurses participate in the NHIS in a given year (this was especially evident during the 1970s), we combined data from adjacent surveys to provide a minimum sample size of 100 respondents within each occupation to produce more stable estimates of smoking prevalence. Five combined NHIS data sets were analyzed: 1974, 1976, and 1977 (total number of records in data set, N=71495); 1978 through 1980 (N=49 500); 1983 and 1985 (N=56048); 1987 and 1988 (N= 88356); and 1990 and 1991 (N= 84 836). Current occupation (ie, within the last 2 weeks) was coded using US Census codes.<sup>21,22</sup> Because only persons 20 years of age and older were included in the 1976 and 1977 NHISs, we restricted our analyses to persons aged 20 years and older in all survey years. For physicians, sample sizes were 137 in 1974, 1976, and 1977; 110 in 1978, 1979, and 1980; 121 in 1983 and 1985; 210 in 1987 and 1988; and 242 in 1990 and 1991. For registered nurses, sample sizes were 516 in 1974, 1976, and 1977; 421 in 1978, 1979, and 1980; 546 in 1983 and 1985; 943 in 1987 and 1988; and 901 in 1990 and 1991. Finally, for licensed practical nurses, sample sizes were 195 in 1974, 1976, and 1977; 162 in 1978, 1979, and 1980; 178 in 1983 and 1985; 258 in 1987 and 1988; and 255 in 1990 and 1991.

#### Definition of Smoking

"Ever smokers" were defined as persons who smoked 100 or more cigarettes in their lifetime. Ever smokers who reported smoking now were considered "current smokers," whereas ever smokers who reported that they did not smoke now were considered "former smokers." Respondents whose ever or current smoking status was unknown were excluded from all analyses. "Quit ratios" (the number of former smokers divided by the number of ever smokers) were calculated to determine the percentage of ever smokers who had quit smoking.[23]

#### Statistical Analyses

Data were weighted to produce national estimates for smoking prevalence, quit ratios, and annual populations within each occupation. Standard errors (SEs) were estimated using Software for Survey Data Analysis (SUDAAN),[24] and 95% confidence intervals (CIs) were calculated for smoking prevalence and quit ratios.

To identify trends in smoking, we created regression models for current smoking prevalence within each occupation. For our models, the point estimates for smoking prevalence were regressed on midpoints of the combined survey year periods (January 1, 1976; July 1, 1979; July 1, 1984; January 1, 1988; and January 1, 1991). Based on scatterplots, we hypothesized that linear trend lines would best describe our data. Weighted least squares were used to estimate the parameters of the models, with weights computed as the inverse of the estimated variance of prevalence. The goodness of fit for the models was estimated by the [R.sq.<sup>2</sup>] coefficient, and Student's t tests were used to determine if the slopes were significantly different than zero.

#### Results

Compared with the data from 1974, 1976, and 1977, the data from 1990 and 1991 showed cigarette smoking prevalence had declined from 18.8% to 3.3% among physicians, from 31.7% to 18.3% among registered nurses, and from 37.1% to 27.2% among licensed practical nurses (Table). Over this same time period, quit ratios increased substantially among these occupations. Based on 1990 and 1991 data, there were an estimated 18 000 physicians, 322

000 registered nurses, and 128 000 licensed practical nurses who smoked in the United States.

Trend analyses demonstrated that smoking declined by an average of 1.15 percentage points per year for physicians (SE of slope = 0.13;  $P < .001$ ), 0.88 percentage point per year for registered nurses (SE of slope = 0.14;  $P < .001$ ), and 0.62 percentage point per year for licensed practical nurses (SE of slope = 0.24;  $P = .083$ ) (Figure).

#### Comment

Cigarette smoking has declined most rapidly among physicians, at an intermediate rate among registered nurses, and at a slower rate among licensed practical nurses in the United States since 1974. The vast majority of physicians who have ever smoked have quit, and an increasing percentage of registered nurses and licensed practical nurses who have ever smoked have also quit smoking.

Our findings are consistent with previous studies indicating that physicians are far less likely to smoke than is the general population.[4-6,13-15,17,18] While the cigarette smoking prevalence among registered nurses was higher than the prevalence among all adults in the late 1960s,[5] smoking among registered nurses has been less common than among the adult population since the mid 1970s.[25-28] In marked contrast, smoking prevalence has, until recently, been higher among licensed practical nurses than among all adults.[25-28]

The decline in smoking among physicians, registered nurses, and licensed practical nurses is the result of an increase both in quitting behavior and in the increasing number of nonsmokers entering health care occupations. Studies suggest that physicians and nurses quit smoking for the same reasons cited by the general population (eg, concern about health effects, family pressure, or cost),[29-31] although the desire to provide a more exemplary role toward patients and children is another often-mentioned reason.[4,5,29] Exposure to patients with smoking-related health conditions may serve as an additional motivator.

The general decline in smoking among younger birth cohorts during this century is another reason for the reduced smoking prevalence observed in these populations: as older workers from earlier cohorts (many who smoked) are gradually replaced by younger workers who are primarily nonsmokers, smoking prevalence declines.[31] Other factors, such as the more rapid decline in smoking among all adults with higher levels of education, are probably responsible for some of the changes in prevalence, especially among physicians.[25-28,32] For example, from 1974 to 1985, level of education was the major sociodemographic predictor of adult smoking status in the United States, with prevalence declining most rapidly among persons with college degrees. Finally, there may be self-selection of nonsmokers for careers in certain health occupations or social pressures in professional schools to discourage smoking; for example, medical students are less likely to smoke than college graduates of similar ages.[33,34]

The smaller decline in smoking prevalence among licensed practical nurses is of concern. This may reflect the association between lower levels of education and higher smoking prevalence,[25] since educational levels of licensed practical nurses are generally lower than those of registered nurses or physicians. Efforts to encourage smoking cessation among licensed practical nurses are needed.

There are limitations to our study. The NHIS relies on self-reports for smoking behavior without biochemical verification; in general, however, self-reports have been found to be reliable estimates of actual smoking behavior in population-based surveys.[35] Because of their knowledge about the health effects of smoking and awareness of societal expectations,

physicians and nurses may potentially be more likely to underreport smoking. The NHIS excludes members of the noncivilian and institutionalized population; therefore, these results may not be applicable to military personnel. Even though we combined data from NHIS surveys to increase sample size and stability of the estimates, the smaller number of physicians and licensed practical nurses made estimates less precise for those occupations, especially during the 1970s. Finally, our results apply only to cigarette smoking and not to total tobacco use. A recent Minnesota study found that the prevalence of pipe smoking for male physicians was similar to that for all adult males in the United States.[36]

Because of their important roles as exemplars and health educators, physicians and nurses should not smoke. Studies suggest that smoking by physicians and nurses undermines the message to patients about the adverse health effects of smoking,[37] and physicians and nurses who smoke are much less likely to recognize their importance as health educators or to encourage smoking cessation by their patients.[1,4,5,8-10] The decline in smoking among physicians and nurses is encouraging and demonstrates that increasingly they are following their own advice to patients and not smoking.

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#### References

- [1.] US Dept of Health, Education, and Welfare. Smoking and Health: A Report of the Surgeon General. Rockville, Md: US Public Health Service, 1979. US Dept of Health, Education, and Welfare publication PHS 79-50065.
- [2.] US Public Health Service. Healthy People 2000: National Health Promotion and Disease Prevention Objectives: Full Report, With Commentary. Washington, DC: US Dept of Health and Human Services, Public Health Service, 1991. US Dept of Health and Human Services publication PHS 91-50212.
- [3.] National Clearinghouse for Smoking and Health. Adult Use of Tobacco—1975. Rockville, Md: US Dept of Health, Education, and Welfare; 1976:23.
- [4.] Noll CE. Health Professionals and the Problems of Smoking and Health, Report 3: Physicians' Behavior, Beliefs, and Attitudes Toward Smoking and Health, Report on NORC Survey 4001. Chicago, Ill: University of Chicago, National Opinion Research Center; 1969.
- [5.] Noll CE. Health Professionals and the Problems of Smoking and Health, Report 5: Nurses' Behavior, Beliefs, and Attitudes Toward Smoking and Health: Report on NORC Survey 4001. Chicago, Ill: University of Chicago, National Opinion Research Center, 1969.
- [6.] National Clearinghouse for Smoking and Health. Survey of Health Professionals Smoking and Health, 1975. Rockville, Md: US Public Health Service; 1976.
- [7.] Wells KB, Lewis CE, Leake B, Ware JE. Do physicians preach what they practice? JAMA. 1984; 252:2846-2848.
- [8.] Levitt EE, DeWitt KN. A survey of smoking behavior and attitudes of Indiana physicians. J Indiana State Med Assoc. 1970;63:336-339.
- [9.] Becker DM, Myers AH, Sacci M, et al. Smoking behavior and attitudes toward smoking among hospital nurses. Am J Public Health. 1986;76:1449-1451.
- [10.] Dalton JA, Swenson I. Nurses and smoking: role modeling and counseling behaviors. Oncol Nurs. 1986;13:45-48.
- [11.] Elkind AK. Nurses' smoking behavior: review and implications. Int J Nurs Stud. 1980;17:261-269.
- [12.] Kottke TE, Hill C, Heitig C, et al. Smoke-free hospitals. Minn Med. 1985;68:53-55.
- [13.] Garfinkel L. Cigarette smoking among physicians and other health professionals, 1969-1972. CA Cancer J Clin. 1976;26:373-375.
- [14.] Garfinkel L, Stellman SD. Cigarette smoking among physicians, dentists, and nurses. CA Cancer J Clin. 1986;36:2-8.
- [15.] Harvey L. Physician Opinion on Health Care Issues 1987. Chicago, Ill: American Medical Association; 1987.

[16.] Myers AH, Rosner B, Abbey H, et al. Smoking behavior among participants in the Nurses' Health Study. *Am J Public Health*. 1987;77:628-630. [17.] US Dept of Health and Human Services. The Health Consequences of Smoking: Cancer and Chronic Lung Disease in the Workplace: A Report of the Surgeon General. Rockville, Md: US Public Health Service; 1985. US Dept of Health and Human Services publication PHS 85-50207. [18.] Brackbill R, Frazier T, Shilling S. Smoking Characteristics of US workers. *Am J Indust Med*. 1988; 13:5-41. [19.] National Center for Health Statistics, Kovar MG, Poe GS. The National Health Interview Survey design, 1973-84, and procedures, 1975-83. *Vital Health Stat* 1. 1985; No. 18. US Dept of Health and Human Services publication PHS 85-1320. [20.] National Center for Health Statistics, Massey JT, Moore TF, Parsons VL, Tadros W. Design and estimation for the National Health Interview Survey, 1985-94. *Vital Health Stat* 2.1989; No. 110. US Dept of Health and Human Services publication PHS 89-1384. [21.] US Bureau of the Census. 1970 Census of Population: Alphabetical Index of Industries and Occupation. Washington, DC: US Bureau of the Census; 1971. [22.] US Bureau of the Census. 1980 Census of the Population: Classified Index of Industries and Occupations. Washington, DC: US Department of Commerce, 1982. Publication PHC-C 80-R4 (final edition). [23.] Pierce JP, Aldrich RN, Hanratty S, Dwyer T, Hill D. Uptake and quitting smoking trends in Australia 1974-1984. *Prev Med*. 1987;16:252-260. [24.] Shah BV. So ware for Survey Data Analysis (SUDAAN). Research Triangle Park, NC: Research Triangle Institute; 1989. [25.] Fiore MC, Novotny TE, Pierce JP, Hatziaandreu EJ, Patel KM, Davis RM. Trends in cigarette smoking in the United States. *JAMA* 1989;261:49-55. [26.] Cigarette smoking among adults--United States, 1988. *MMWR Morb Mortal Wkly Rep*. 1991; 40:757-765. [27.] Cigarette smoking among adults--United States, 1990. *MMWR Morb Mortal Wkly Rep*. 1992; 41:354-362. [28.] Cigarette smoking among adults--United States, 1991. *MMWR Morb Mortal Wkly Rep*. 1993; 42:230-233. [29.] Feldman BM, Richard E. Prevalence of nurse smokers and variables identified with successful and unsuccessful smoking cessation. *Res Nurs Health*. 1986;9:131-138. [30.] Centers for Disease Control. Tobacco Use in 1986: Methods and Basic Tabulations From Adult Use of Tobacco Survey. Rockville, Md: Office on Smoking and Health; 1990. US Dept of Health and Human Services publication OM 90-2004. [31.] Strategies to Control Tobacco Use in the United States: A Blueprint for Public Health Action in the 1990's. Bethesda, Md: National Cancer Institute; 1991. National Institutes of Health publication 92-3316. [32.] Pierce JP, Fiore MC, Novotny TE, Hatziaandreu EJ, Davis RM. Trends in cigarette smoking in the United States: educational differences are increasing. *JAMA* 1989;261:56-60. [33.] Baldwin DC, Hughes PH, Conard SE, Storr CL, Sheehan DV. Substance use among senior medical students. *JAMA*. 1991;265:2074-2078. [34.] Coe RM, Cohen JD. Cigarette smoking among medical students. *Am J Public Health*. 1980;70: 169-171. [35.] US Department of Health and Human Services. The Health Benefits of Smoking Cessation: A Report of the Surgeon General. Rockville, Md: Centers for Disease Control, Office on Smoking and Health; 1990:17-70. US Dept of Health and Human Services publication CDC 90-8416. [36.] Hensrud DD, Sprafka JM. The smoking habits of Minnesota physicians. *Am J Public Health*. 1993; 83:415-417. [37.] Dawley HH, Carrol SF, Morrison JE. The discouragement of smoking in a hospital setting: the importance of modeled behavior. *Int J Addict*. 1981; 16:905-910.

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The smoke-free workplace.

Prata, Kathleen

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#### TEXT:

Could employers be liable for second-hand smoke?

Smoke-free workplaces have been in vogue since the fitness-crazed '80s. Soon they might become an employer's only protection from a civil suit.

In January the Environmental Protection Agency reclassified secondhand smoke as a Group A carcinogen, likening it to benzene, asbestos and radon. The report sent a lighting bolt of concern down the backs of Indiana businesses worried about their liability for secondhand smoke at work.

"I probably get three or four calls a week from businesses around Indiana," says Roger McClain, director of the Division of Health Education for the Indiana State Department of Health. "They all want to know how they can go about instituting a smoke-free policy. It's really caught on. There's quite a bit of interest out there, and rightfully so."

Workers around the country have already sued successfully for health problems due to involuntary exposure to smoke. The new Americans with Disabilities Act sets the ground for even broader protection. Employers are anxious—not only for their own legal safety, but the health of their employees as well.

As evidence continues to mount over smoking's dangers, many businesses are restricting or even banning tobacco in the workplace. These measures can ease employee health-care, reduce facility maintenance costs and prevent potential litigation.

The Occupational Safety and Health Administration has not issued a standard regarding secondhand smoke to date, but Frank Kane, Public Information Specialist, says that his agency anticipates a directive soon from the secretary of labor. The directive could address the issue of secondhand smoke alone or cover the total quality of indoor air. Present OSHA regulations set no limits for Group A carcinogens in the workplace.

But many businesses aren't waiting for the government. By 1991, 85 percent of American businesses had adopted smoking policies, up nearly 50 percent since 1986.

Ford Meter Box, the Wabash-based maker of waterworks equipment, is one company in the forefront. The company, which employs mostly blue-collar workers, pays for nicotine patches for its employees, and will launch a new campaign this fall to encourage smokers to quit. President Terry Agness says the program has gone well so far, and he estimates that 10 to 15 percent of his employees who smoke have kicked their habit.

The Queens Group Indiana Inc. and Oliver Trucking Co. instituted a

tobacco-free workplace policy on March 29. Vice president and general manager Stanton Bryan announced the policy in January, giving employees plenty of notice. The policy covers all buildings, company-owned vehicles and surrounding property. Violators may be disciplined, and repeat offenders can be fired.

USS Gary Works, about to jump on the bandwagon, is using its employees and their unions to research a future smoke-free workplace policy.

"We're still in the fact-gathering stages. We've talked to a lot of associations like American Lung, American Cancer, and the manufacturers of Nicoderm, Nicotrol, and Habitral (nicotine patches)," says Al Spajer, manager of Arbitration and Human Resource Projects. The program, expected to be in place this summer, will include smoking cessation programs at the company's Family Medical Center.

Spajer stresses that planning and input from employees and their representatives are the key to a successful program. "We simply are not just going to hang paper around this plant," he says.

Indeed, instituting a smoke-free workplace is not as easy as posting signs in the office. An employer needs to take into account the needs of his employees, both smokers and nonsmoker. Where can a businesses go for guidance when instituting a smoke-free policy?

Insurance agencies are one source. Gib Rissle, health promotion and wellness coordinator for Acrodia Business Benefits of Evansville, worked with a group of about eight employees at Plumbing and Industrial Supply of Evansville to develop a smoke-free workplace policy. Representing all levels of employees at the company, they met several times to establish a date that the workplace would go smoke-free and then developed strategies to help fellow smokers to quit.

The process at Plumbing and Industrial Supply started in mid-1991. Initially, smoking areas were designated, but these were phased out by the January 1993 quit date. Intervention and education programs were also offered.

"At one time they had about 14 smokers, and I think they have only one or two employees still smoking out of 37 total employees," Rissle says. "I think the smoke-free workplace policy has worked to help them quit."

Rissle also has been working with sports equipment maker Indian Industries to establish a smoking policy. Like many blue-collar industries, there was a high percentage of smokers on Indian's payroll, nearly 45 percent. It's down to 40 percent now and is expected to drop even more. Rissle says it's common for industry in a blue-collar area like Southern Indiana to have a 50 to 60 percent smoking population among its workers.

Smoking cessation programs will soon be an added employee benefit. The company pays for nicotine patches for its employees, with the stipulation that employees must reimburse the company if they start smoking again within a two-year period.

"Indian Industries will pay for part of the smoking cessation program as well," Rissle says. "We try to set incentive programs up in that way because it gives the employees some responsibility, and it gives them some incentive to continue on with their change."

Implementing a smoke-free program does not necessarily mean declaring war on your smokers, Rissle says. In fact, involving one's smokers is vital to hammering out a policy.

"The smokers are much tougher on themselves than non-smokers would be," Rissle says. "I strongly believe it's the way to go."

Agness agrees. "The whole thing has been very interesting because we've had several employees say, 'Why don't you make the whole place smoke-free so I can quit?'"

The power of one's work environment is well-known to Dr. Arden Christen, director of the Indiana University Nicotine Dependence Program, another resource for companies. Christen got his wisdom from none other than former Surgeon General C. Everett Koop, whom he worked with on several occasions. The Surgeon General assured him that "not allowing people to smoke at work is going to help more people quit than anything," says Christen.

Patterned after the program at the Mayo Clinic in Rochester, Minn., IU's one-on-one program runs \$200 for average smokers to \$300 for heavy smokers, plus the cost of the nicotine patches and gum. A \$100 fee is charged for the initial diagnostic consultation. A carbon monoxide breath analysis and a nicotine dependence/motivation questionnaire establish a smoker's profile. From the results, a 10-week program is negotiated, and a date is set for the patient to quit smoking. \$25 is charged for each visit thereafter, with most patients needing between three and five follow-ups.

"We have them select a quit date, which is when they switch from getting their nicotine from cigarettes to patches and gum," Christen says. "We start them off on 21 mg. of nicotine a day (likened to smoking a pack a day) and then gradually decrease it to 14 mg. and then 7 mg. Then, they can go cold turkey from there without too much difficulty."

Dr. Christen and his associates researched smoking addiction for 10 years before starting its cessation program last year, treating some 2,700 patients with nicotine gum and more than 400 with nicotine patches.

"We've had 225 patient visits within the first six months, and we're graduating a lot of people," Christen says. "We're not setting the world on fire, but we're getting our foothold, and we're in it for the long haul."

Though it may seem expensive, the cost of offering smoking cessation programs is proving to be a cost-saving measure, not an added employee benefit expense. "Even with more than 20 people wearing the patch, I would say that this policy is a net savings, not counting the medical plan," says Agness. "The clean-up is less."

Companies spend at least \$1,000 per year on each smoker due to decreased productivity and increased health-care costs. By instituting a smoke-free policy, companies incur fewer maintenance costs for computers, furniture, carpets, and, in some cases, lower premiums for life, health and fire insurance.

At least one company thinks the IU plan is worth the money. Indianapolis Water Co. is developing a policy and will offer financial assistance for employees to attend the IU Nicotine Dependence Program, says Les Williams, vice president of human resources.

Along with insurance companies and IU, area hospitals are another contact for companies interested in kicking their workers' habit. Hospitals were ordered smoke-free in January 1992 by the Joint Commission, an accreditation agency for hospitals who treat Medicare patients. Smoking by both staff and patients, excluding those in chemical addiction and psychiatric wards, will be eliminated by December 31, 1993.

The Indiana Hospital Association sponsored a task force comprised of Community Hospitals Indianapolis, St. Francis Hospital Center, Indiana University Medical Center, St. Vincent Hospitals and Health Services, Methodist Hospital of Indiana, and the Indiana Chamber of Commerce. The task force compiled a 30-page booklet with up-to-date statistics on the harmful effects of smoking, describing the economic benefits of a smokeless facility. It outlines sample smoke-free policies and offers strategies for implementing policies.

In addition, area hospitals offer a number of smoking-cessation programs, ranging in costs from no fee to approximately \$200.



Caylor-Nickel Medical Center in Bluffton offers the FreshStart program to the general public at no cost to the participant. The program, developed by the American Cancer Society, consists of four one-hour sessions. The hospital recently began offering on-site instruction for businesses at a nominal fee to cover instructor expenses.

St. Mary's Medical Center in Evansville offers a program called "Helping Smokers Quit," which, according to Cindy Williams, director of Health Matters, is based on the American Cancer Society's FreshStart program. The difference lies in the length of the class, which runs six sessions over a four-week period, rather than just the four sessions.

St. Mary's offers worksite programs, but a minimum of eight people is required at a cost of \$60 per participant. Generally tailored to fit the company's needs, most sessions run from 45 minutes to an hour. When employees are sent to the hospital for instruction, only four participants are required and the price drops to \$45 per participant. In addition to advice on smoking cessation, participants are given tips on exercise, nutrition, and medical aids such as the patch and gum.

The SMOKELESS program, developed by the American Institute for Prevention Medicine, has been offered by Community Hospitals Indianapolis for more than four years, both in the hospital and on-site. The average cost is \$125 per person, with discounts offered for groups of 20 or more. The program also takes the holistic approach and emphasizes proper nutrition, stress management and exercise, as well as smoking cessation. From 45 to 65 percent of the program's graduates remain "comfortable, confident nonsmokers after one year," says Denise Gaskin, health promotion coordinator.

Community Hospitals is providing SMOKELESS classes at DowElanco in Indianapolis. DowElanco, along with other Dow organizations in Indianapolis, has a gate-to-gate no-smoking policy, with some areas designated tobacco free. The Dow parent company instituted the policy on July 1, 1990. "We occasionally get a few smokers who sneak off to the bathroom, but a majority of those involve contractors, not employees," says Paul Brownson, director of Occupational Health for Community. "Our predominantly white-collar work force tends to agree with the scientific evidence, so there hasn't been too much resistance." DowElanco's smoking population has been cut in half, with less than 15 percent of its employees still smoking.

Kosciusko Community Hospital of Warsaw offers Smoke Stoppers, a program developed by the National Center for Health Promotion of Ann Arbor, Mich. Boasting a 63 percent national success rate, the program costs \$175 per person, with corporate discounts available. Three companies -- Norris Construction, Peters Engineering and BASF -- have provided Smoke Stoppers for employees.

Melinda Griffith, exercise specialist for Kosciusko, recommends that companies have their employees pay at least part of the program's cost.

"The employees that have to pay a little something are a lot of more serious," Griffith says. "They're not wasting their time, my time or the company's money. It's important. They need to have some ownership."

The anti-tobacco trend shows little signs of slowing down. Roger McClain says most workplaces will be tobacco-free by the end of the decade. "Our goal in the state of Indiana is to bring our smoking prevalence down to 17 percent by the year 2000, and part of the process is to make all the cues in society working toward nonsmoking as the norm."

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Clearing the air. (enforcing no smoking policies in the work  
place)(includes related article) (Special Report)  
Harris, Jeffrey S.  
HRMagazine, v38, n2, p72(8)  
Feb, 1993

TEXT:

Sound policies that address key issues have helped leading-edge companies become smoke free.

The number of companies restricting smoking in the workplace has risen from 16 percent in 1980 to 60 percent in 1991. The number banning smoking on their premises rose from 14 percent in 1988 to 25 percent in 1989. While 38 percent of these companies ban smoking in buildings, an additional 30 percent ban smoking in open work areas.(1)

The reasons given by employers for restricting smoking at the work site have evolved over the last decade as health impact data has accumulated and as social norms and regulations have changed. In the late 1970s, the limited number of employers who restricted smoking on the job cited safety, productivity and protection of equipment as their motivating factors.(2) In 1987, almost 27 percent of companies surveyed by the Office of Smoking and Health of the U.S. Surgeon General had a restrictive smoking policy, implemented to protect the health of their employees or to comply with government regulations.(3)

The Tobacco Institute has recommended "common courtesy," having smokers ask if others mind if they smoke, as a solution to the issue of environmental tobacco smoke (ETS) exposure. However, data from the National Health Interview Survey suggests that almost half of smokers do not ask, and only 4 percent of nonsmokers ask that smokers stop.(4) The evidence is now clear that passive smoke exposure is harmful to the health of nonsmokers.(5)

It seems logical, therefore, from a public health and product quality standpoint, to restrict or ban the release of tobacco combustion products in the work site. However, those considering a work-site smoking ban are concerned about employee relations problems, possible legal actions, morale, productivity and the possible loss of valuable employees.

Two-step approach

In policy changes such as this, the process is critical. There are several issues involved. To help employers succeed in creating a smoke-free workplace, I undertook a study to seek some strategies and tactics that worked. We used a two-pronged approach to assist employers who were considering becoming smoke free.

First, we surveyed the latest available literature on the effects of passive smoke exposure to provide data for management and employee deliberations and presentations. Data presented by an outside source provides an outside perspective and may be perceived as more neutral and credible.

Second, to determine the most effective plan of action and to provide information on other companies' smoke-free status, we surveyed more than a dozen organizations in a number of industries in 1989 and again in 1991, using a structured questionnaire with open-ended elaboration. We asked about any labor-management difficulties encountered, about smoking

prevalence before and after policy implementation and about any effects the employees' smoking prevalence had on their dependents. We determined the key human resource management issues faced at each company and reviewed how they were resolved. The 1991 survey was intended primarily to determine if any elements of the policy had to be retracted or implementation slowed, to collect further prevalence data and to determine, in retrospect, what the key success factors in policy implementation had been.

We were able to locate companies that had successfully become smoke free in the telecommunications sector, banking, health-care delivery and service industries. We also contacted several pharmaceutical and medical supply companies. During the first survey, most of these firms had restricted smoking to designated areas. By the second survey in 1991, most had become smoke free.

The key HRM issues identified by many of the companies in the survey encompass the key concerns of managers who are considering the benefits and costs of a smoke-free policy. We have included the "best options," or benchmarks for HRM, identified in retrospect by many of the respondents.

#### Management support

Top management support is a critical element to make it clear that management is seriously committed to the health of all employees. At Federal Express, for example, the smoke-free policy and communications about it were signed by the CEO, Fred Smith. At GTE Northwest, Lynn McCarthy, director, Health and Safety, obtained approval for a smoke-free workplace from the company's top decision makers. At Northern Telecom Inc. (NTI), a target date for company-wide compliance was announced in a letter from the president.

It became clear in the 1991 survey that the level of top management support was directly correlated with the speed at which the organization became smoke free and whether the step from restricted areas to a total smoke-free workplace could be taken. For example, Roy Vagelos, the CEO of Merck and a physician, strongly supported the smoke-free effort. The program, therefore, proceeded through extensive negotiations in a heavily unionized environment. Employee surveys also indicated strong support.

Once the CEO of Comerica Inc. approved the smoke-free initiative as a corporate project, both the policy and a health promotion program moved forward without resistance. At Abbott Laboratories, the decision to become smoke free was made by the Operations Committee, which is composed of senior management. In other companies, lukewarm support by top management was cited as a reason for stalled progress.

#### Employee involvement

Involvement of smokers and nonsmokers in decisions about how to become smoke free fosters a sense that employees have a voice determining their own health and safety. Careful planning is important as well. At Vanderbilt University Medical Center, a steering committee deliberated for a year before deciding on a policy for the entire medical center. The chancellor was persuaded to approve the policy at that time.

At Comerica Inc., focus groups revealed management and employee reaction and concerns. The groups felt that passive-smoke exposure was a significant problem. They felt that the company should proceed directly to a nonsmoking, clean air environment, rather than a phased-in approach.

At NTI, a joint Health and Safety and Employee Relations Task Force developed a model policy and guidelines for implementation. Case studies were assembled and several interviews with general management were conducted to anticipate any problems that might arise.

As a result of its focus group work, GTE Northwest issued a set of implementation principles. There was local involvement and control over the

process, a strong communication effort and a multiple-option cessation program. These principles are consistent with the GTE corporate culture. Local employee coordinators selected a target date in 1987 and conducted employee information sessions after training by corporate Health and Safety. A flowchart for implementation helped it proceed smoothly.

Employee involvement was particularly important in a unionized environment. At Michigan Bell, even though there was an arbitration proceeding initiated by the Communications Workers of America (CWA), there was no difficulty with rank-and-file members after a careful communication program.

Merck is a good example of successful employee involvement in a unionized environment. It is the most heavily organized company in the pharmaceutical industry, with 28 different unions. After the policy was negotiated as part of the contract, there was no significant negative reaction from employees.

#### Policy development

The idea for becoming smoke free most commonly originated in the Human Resource and Medical departments, according to survey results. Development and implementation involved a variety of players. When discussing the development of a clean indoor air policy, several points repeatedly came to the fore:

1. Policies that stress protecting the health and safety of all workers, product quality, and facility safety and maintenance are viewed as less "big brotherish" and more logical than those that sound as if they are trying to protect smokers from themselves. This was the message conveyed at Federal Express, Comerica Inc. and NTI.

2. Nonsmoking should be regarded as the norm. In fact, the majority of employees do not smoke. Smokers should be the ones to request exceptions. When nonsmokers must ask for protection from the irritation or other health hazards of smoke, they often are reluctant to come forward.

3. All managers should be held responsible for the successful implementation of the policy. The HR department should consult with managers in advance to build support and improve the plan, and they should be available to consult with managers as needed. At Comerica, a question line was available in Human Resources. The policy and associated communications packages for the Clearing the Air ITM

program at NTI were reviewed by HR directors from all divisions and groups. Some violations were handled by personal contacts from the vice president or from directors of Human Resources. As a result of manager-HR interaction at NTI and Prudential, smoking areas were established outside the buildings. HR also assisted managers at Prudential in handling excessive break time associated with smoking.

#### Legal considerations

While there are general legal requirements to provide a safe workplace and to abate public nuisances, there is no legally protected right to smoke. There are currently no OSHA regulations on smoking in the workplace, although the issue is under study by the Indoor Air Quality divisions of both OSHA and the Environmental Protection Agency. A lawsuit by Action on Smoking and Health may force the issuance of regulations in the near future.

However, some legal experts feel that the general duty clause of the Occupational Safety and Health Act of 1970, which mandates that each employer "shall furnish to each of his employees employment and a place of employment which are free from recognized hazards...", may well apply to work-site smoking.<sup>(6)</sup>

There have also been workers' compensation awards because of disease

that apparently has developed primarily from smoke exposure at work. An increasing number of companies have been held liable for the health effects of secondhand smoke under workers' compensation statutes.<sup>(7)</sup>

#### Labor relations issues

Unions have rarely taken a position on clean air policies. Since they must represent both smokers and nonsmokers, this is a no-win situation for organized labor. At Northern Telecom, the CWA, which has periodically tried to organize the company, indicated that it would not become involved in this issue. The CWA did not become actively involved at US West when smoke-free policies were implemented. They have made health and safety an issue, making opposition illogical if not untenable. The Oil, Chemical and Atomic Workers at CIBA-Geigy has been supportive of the smoke-free program. At Merck, the issue was negotiated and tied to wage and hour improvements. The director of Labor Relations there felt that while unions object to smoke-free policies because they oppose additional perceived disciplinary measures, once they have bargained the issue they abide by the agreement.

At Michigan Bell, the CWA demanded arbitration when a smoke-free policy was instituted. The union claimed (interestingly, in light of the Merck experience) that smoking was a working condition that could be changed only through collective bargaining. Michigan Bell took the position that the union had waived its right to bargain because it did not so demand after the company notified all employees of the policy. In the arbitration proceeding, the union produced several employees who were allegedly addicted and could therefore not work effectively without smoking. The arbitrator dismissed both grounds for the action, noting that addicts belonged in treatment rather than on the job. He made the analogy that alcohol addiction did not imply a protected right to drink on the job.

All companies surveyed indicated that violations of the smoke-free policy should be handled in the same manner as any other work rule infraction. This is the case at every company surveyed. The most common form of disciplinary procedure is the progressive discipline process.

#### Employee reactions

One of the top concerns of any management team at a company contemplating becoming smoke free is that there be minimal negative reaction from employees. Employee reaction at all companies surveyed has been overwhelmingly positive. The degree of positive reaction, especially among smokers, appears to increase the longer the policy has been in place.

Many smokers have reacted positively to smoke-free policies, saying that it gave them a compelling reason to quit. Some have also stated that their families were glad they had quit. Three implementation issues were of particular concern:

Communication tactics. Employee involvement and communication are critical to trouble-free implementation. The handling of communications, surveys and peer support varied. Some companies used adopt-a-smoker campaigns. Some took before and after surveys. Others, concerned about antagonizing already irate smokers, did neither. There is no obvious way to determine which of these was more effective, since no post-implementation attitude surveys on communication techniques have been done, and no obvious incidents were ascribed to communications.

Smokers may be defiant or defensive. Several companies successfully defused this issue by taking a low-key approach. At Comerica Inc., for example, a positive, matter-of-fact approach was used in communication and implementation of the program. There were no adopt-a-smoker activities nor a formal campaign. Employees were informed and involved through two memos, a Q and A newsletter, plus group and one-on-one communication from managers to their employees in a "management cascade," which began six months before

the change in policy.

Smoking rooms. Policies that allow designated smoking areas were felt to be difficult to administer because of the amount of smoke in the areas and because the policies are felt to send mixed messages. Designated smoking rooms create an unsafe environment, provide an amenity not available to nonsmokers (breaks may be similar) and are costly. They are also contrary to the philosophy of a smoke-free policy. In addition, smaller offices often cannot accommodate a designated room or space.

Lost time and production. Most companies were quite concerned about disciplinary problems, loss of key employees, creation of a hardship for smokers and loss of productivity. None of these issues posed major problems when the policies were actually implemented.

#### External relations

As for external relations, most companies felt that they had received valuable free publicity from their policies. Most firms surveyed were featured in local television stories and other publicity. Comerica Inc. and Group Health Cooperative, among others, received favorable press coverage and requests for assistance from other companies.

Several companies were rumored to have been threatened with loss of business from the tobacco companies. To our knowledge, none of the threats materialized, although they may have kept the external publicity at a deliberately lower level. A number of companies were concerned that visitors and customers might react negatively to a smoke-free environment. By taking a series of preemptive steps, this problem has been avoided. These steps have generally included an announcement letter prior to the ban, brochures at the reception desk and a mention of the policy during the pre-entry briefing.

#### Effects on tobacco consumption

The available data show that smoking decreases about 5 percentage points from the pre-ban prevalence. In other words, about 22 percent of smokers have quit within six months. The level continues to decrease over time. By one year, 38 percent of those who smoked at the time of the ban had quit, on average. The design of the policy and the various communication, support and smoking-cessation programs appear to be key, because the decrease in smoking prevalence ranged from 21 percent to 77 percent. Similarly, at five years, the decrease ranged from 50 percent to 93 percent.

The cause of the drop is typically confounded by concurrent cessation activities and marketing efforts. Most companies offered cessation classes, although the participation rates have varied widely for reasons that are not clear. In other words, it is not clear how much the ban itself contributed to the decrease in smoking prevalence. Normal employee turnover may affect the figures either way. Nonsmokers may elect to work in a smoke-free workplace, but new employees will not have been exposed to peer pressure, media campaigns or cessation classes. Larry Page, the director of Safety at Federal Express, feels that nonsmokers now selectively apply for employment there. Provident Mutual Life apparently attracts only nonsmokers, because the prevalence of smoking is now extremely low.

Data on the level of consumption are generally subjective. The two health-risk-appraisal and survey-based studies we located showed more than a 50 percent drop in the average daily consumption.

The prevalent assessment of smoking employees is that smokers are taking only a few breaks a day, are not able to chain smoke at work and, while smoking somewhat more at home, are not in any way making up for the amount they do not smoke at work. Thus the total dose of smoke-related chemicals, and the total risk of disease, is significantly decreased.

There do not seem to be any hard data available on effects on dependents. Anecdotal and reimbursement-claims evidence indicates that spouses are quitting, especially in company-sponsored programs. Dependents of employees who quit are exposed to less smoke, lowering their health risks and the company's insurance costs.

Social support is known to be critical to sustained quitting. Thus an emphasis on dependents is warranted. CIBA-Geigy provides a particularly good example. Dr. Michael Quatrella, the corporate medical director, feels that opening smoking-cessation classes to families has had a supportive effect similar to Al Anon (the family support group associated with Alcoholics Anonymous). He feels that this explains the sharp drop in smoking prevalence in one year. A number of companies have observed significant difficulties if one spouse attempts to quit and the other continues to smoke.

#### Interesting highlights

Since this was a management rather than a scientific study, we placed more emphasis on the process of becoming smoke free than on survey research on results. Nevertheless, the comparisons are illuminating.

The companies that went smoke free first were in the health-care industry and in insurance (where the corporate culture might be expected to be supportive of healthy behavior), telecommunications (where there has traditionally been a strong emphasis on employee health), and banking.

Many employers hope that restrictions on smoking will induce some smokers to quit or at least reduce their consumption, thus improving health and reducing costs of health care. In one of the few studies examining the differences in health-care costs between smokers and nonsmokers, tobacco users had more hospital admissions per 1,000 (124 vs. 76), bed-days per 1,000 (800 vs. 381), a longer average length-of-stay (6.47 days vs. 5.03 days), higher insurance payments (\$1,145 vs. \$762), and higher outpatient payments (\$122 vs. \$75).(8)

Researchers evaluated the effects of the smoke-free policy at Johns Hopkins Medical Center by progressively tracking a group of employees. The policy effectively abolished observable smoking in cafeterias and lounges. Cigarette debris found in elevators and lounges dropped dramatically. The number of fires attributed to smoking decreased from an average of four per year to zero in the first year of policy implementation. Atmospheric nicotine, used as a proxy for ETS, fell by almost 99 percent in all areas except rest rooms, where the level fell by nearly 80 percent. Particulates decreased significantly at one year.(9)

In a Texas public assistance agency, offices could choose to ban or restrict smoking. In areas with bans, smoking prevalence dropped from 25.1 percent to 16.6 percent six months after the ban. In areas with restrictions only, there was no decrease in prevalence.(10) The changes were not statistically significant, however. This study did report a significant 75 percent drop in the number of cigarettes smoked per day. The number of cigarettes smoked decreased significantly at work only. Since the health effects of smoking are dose-related, illnesses should decline. In addition, the proportion of employees reportedly bothered by co-workers' smoke dropped from 21.8 percent to 3.8 percent. The authors suggest that a ban may be easier to enforce than restrictions.

A total smoking ban at Telecom Australia, implemented in phases, was negotiated with six unions. There was a low level of violation. After 18 months, 81 percent of employees, including 53 percent of smokers, approved of the ban. Smokers reported using three to four fewer cigarettes a day.(11) Success factors included a clear statement of policy, strong managerial support (including equipping managers with leadership and

negotiating skills), and the use of occupational health nurses. Interestingly, line managers wanted unambiguous guidelines for implementation and corporate support for their enforcement of the ban.

#### Summary

Smoke-free-workplace policies can be instituted successfully without adverse effects if carefully developed and implemented. Top management support appears to be important to a speedy and well-accepted implementation. Few employee relations problems were reported, and no terminations were noted. Smoking prevalence fell, and employee support for the ban increased over time.

Work-site smoking bans can promote the health of all employees. They reduce exposure to particulates, carcinogens, irritants and other toxic combustion products. This cultural/environmental change appears to leverage the effects of current smoking cessation efforts. Such policies may protect employers from workers' compensation claims, as well as tort and regulatory actions by employees who may have suffered adverse health effects from ETS. They may also help reduce health-care and absenteeism costs.

#### New EPA Study

A new report released Jan. 7 by the Environmental Protection Agency concludes that secondhand cigarette smoke has a "serious and substantial public health impact" on nonsmokers.

EPA administrator William K. Reilly endorsed the report, which was released by a panel of scientific advisers after two years of review. The report's findings show that secondhand cigarette smoke is a human carcinogen, killing about 3,000 nonsmokers in the United States each year because of lung cancer. It also found that cigarette smoke greatly increases the risk of respiratory illness in children.

Health advocates predicted the report would lead to more smoking restrictions in public places, while tobacco industry representatives said it is not supported by scientific evidence.

Legal specialists predicted that the EPA report could increase the number of tobacco-related lawsuits, including workers' compensation claims filed by nonsmokers who say they became ill because of secondary smoke in the workplace.

The week after the EPA report was issued, Labor Secretary Lynn Martin ordered Occupational Safety and Health Administration officials to propose policies for dealing with the health hazard created by cigarette smoke in the workplace.

#### The Evidence on Passive Smoke Exposure

Environmental tobacco smoke (ETS) comes from two sources, mainstream and sidestream smoke. Mainstream smoke is a complex aerosol mixture inhaled by the smoker, filtered in the lungs and exhaled. Sidestream smoke is emitted by the lit end of a cigarette or other smoldering tobacco combustion product. Sidestream smoke, which makes up an estimated 85 percent of the smoke in an average room, has higher concentrations of carbon monoxide, ammonia, nitrosamines, benzene and aromatic amines than mainstream smoke. Sidestream smoke has a smaller particle size, allowing deeper penetration into the lungs. It is also unfiltered. In all, there are more than 3,800 substances in ETS. A nonsmoker's exposure is determined by smoking rate, ventilation, type of cigarette, duration of exposure and other factors.

#### Advice from Smoke-free Employers

- \* Communicate early and often; educate all managers and employees.
- \* Work with the union.
- \* Treat the issue and smokers with dignity and seriousness; don't make examples.



- \* Do not use designated smoking areas.
- \* Offer help for smokers.
- \* Clearly define the implementation schedule; do not depart from it.

## Notes

1. Action on Smoking and Health Review, 21 (1991):3.
2. D.C. Walsh and V. McDougall, "Current Policies Regarding Smoking in the Workplace," American Journal of Industrial Medicine 13 (1988):18-21.
3. Office of Health Promotion and Disease Prevention, National Survey of Worksite Health Promotion Activities: A Summary (Washington, D.C.: U.S. Department of Health and Human Services, Public Health Service, 1987).
4. R.M. Davis, G.M. Boyd and C.A. Schoenborn, "Common Courtesy' and the Elimination of Passive Smoking," Journal of the American Medical Association 2673 (1990):2208-2210.
5. "Environmental Tobacco Smoke in the Workplace: Lung Cancer and Other Health Effects," Center Intelligence Bulletin 54 D.H.H.S. (NIOSH) Publication No. 91-108 (Cincinnati: National Institute of Occupational Safety and Health, 1991).
- "Environmental Tobacco Smoke," Indoor Air Facts 5, ANR Publication 445 (Washington, D.C.: U.S. Environmental Protection Agency, Office of Air and Radiation, 1989).
6. F.C. Davenport, "The Legal Aspects of a Smoking Policy in the Workplace," Industrial Management (May/June, 1988):25-31.
7. F. Speer, "Tobacco and the Non Smoker: A Study of Subjective Symptoms," Archives of Environmental Health 16 (1988):443-446.
8. M. Penner and S. Penner, "Excess Insured Health Care Costs from Tobacco Using Employees in a Large Group Plan," Journal of Occupational Medicine 32 (1990):521-523.
9. F.A. Stillman, D.M. Becker, R.T. Swank et al., "Ending Smoking at the Johns Hopkins Medical Institutions: An Evaluation of Smoking Prevalence and Indoor Air Pollution," Journal of the American Medical Association, 264 (1990):1565-1569.
10. N.H. Gottlieb, M.P. Erickson, C.Y. Lovato, R.P. Weinstein and L.W. Green, "Impact of a Restrictive Worksite Smoking Policy on Smoking Behavior, Attitudes and Norms," Journal of Occupational Medicine 32 (1990):16-23.
11. B. Hocking, R. Borland, N. Owen and G.A. Kemp, "A Total Ban on Workplace Smoking is Acceptable and Effective," Journal of Occupational Medicine 33 (1991):163-167.

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06141874 SUPPLIER NUMBER: 12606764 (THIS IS THE FULL TEXT)  
Protection from environmental tobacco smoke in California: the case for a smoke-free workplace.  
Borland, Ron; Pierce, John P.; Burns, David M.; Gilpin, Elizabeth; Johnson, Michael; Bal, Dileep  
JAMA, The Journal of the American Medical Association, v268, n6, p749(4)  
August 12, 1992

## TEXT:

## The Case for a Smoke-Free Workplace

SMOKING in the workplace has become an important public health issue in recent years as the health effects of exposure to environmental tobacco smoke (ETS) have been increasingly documented. Research has shown that ETS increases the nonsmoker's risk of getting both lung cancer[1,2] and heart disease[3] as well as a range of respiratory illnesses. These data culminated in the Environmental Protection Agency issuing a draft report that identified ETS as a class A (known human) carcinogen in 1990.[4]

As this evidence accumulated throughout the 1970s and 1980s, it was accompanied by considerable social action in the United States that was aimed at regulating tobacco use in public places.[2] This action has been manifested by regulations at the state and local levels as well as by private-sector policies. By 1989, 45 states had laws restricting smoking in public places. In 17 of these states, some restrictions were extended to private-sector workplaces.[5] In a detailed review of local ordinances in 1989, Pertschuk and Shopland[6] identified a total of 397 city and county smoking ordinances that covered approximately one fifth of the total population of the United States. Three quarters of these ordinances mandated the adoption of workplace smoking policies; however, the strength of these laws varied considerably, from simply requiring a written policy to virtually eliminating smoking in the workplace.

These laws and ordinances have encouraged and supported initiatives by private businesses to restrict smoking at the work site.[7] Employers have many reasons (eg, medical, legal, legislative, and economic) for taking the initiative on workplace smoking policies.[8] The likelihood that private industry would take a strong initiative and ban tobacco from the workplace increased when data showed that the simple separation of smoking and nonsmoking indoor workers who use the same air space fails to eliminate the exposure of nonsmokers to ETS.[1,2]

The Bureau of National Affairs, Washington, DC, conducted two surveys of workplaces and estimated that 54% of companies in the United States had smoking policies in 1987. However, confidence in the precision of this estimate is low because of a poor response rate.[7] Data from individual employees' perspectives on workplace policies are available from the 1986 Adult Use of Tobacco Survey: 45% of employed adults reported some restrictions at their place of work; however, only 3% reported a total ban on smoking at work.[7,9]

Previous studies evaluating work-site smoking policies have mainly focused on the influence of these policies on smoking behavior rather than on exposure to ETS. Several studies have shown that smokers smoke less when work-site smoking bans are introduced.[10-12] Although increased quitting had been found in some studies,[11,13-15] in at least one study it was not seen.[12] Also, some researchers have suggested that a strong work-site smoking policy may discourage smoking uptake among young people just entering the work force.[10,11,16-19] After implementation of a smoke-free policy at one institution, the concentration of vapor-phase nicotine decreased significantly in all work areas and public areas except rest rooms.[11] However, little is known concerning the effect of work-site smoking policies on ETS exposure in nonsmokers in the general population.

In this study, we investigate the relationship between the level of the work-site smoking policy and ETS exposure among nonsmoking indoor workers in California in 1990 and whether ETS exposure is related to sociodemographic variables.

## METHODS

The study population was derived from persons interviewed as part of

the 1990 California Tobacco Survey carried out from July 1990 through February 1991. This study was commissioned by the state of California to obtain information on cigarette smoking prevalence and other tobacco use; long- and short-term smoking history, including quitting behavior; knowledge and attitudes about the health risks associated with smoking; smoking in the workplace; smoker and nonsmoker activism; attitudes and opinions concerning public policy; and media exposure to public health messages and tobacco advertising. Using a stratified random-digit dialing technique,[20] the head of household in 32 135 homes (response rate, 75.1%) was surveyed briefly (in either English or Spanish) to enumerate household members and determine the smoking status of each household member. From this information, all adult household members (at least 18 years of age) who were reported as having smoked within the past 5 years were scheduled for an in-depth interview, as were 28% of nonsmokers (response rate, 75.3% of those selected). Of the 24 296 respondents, 16 197 were employed outside the home; 11 704 reported that they worked primarily indoors, of whom 7301 were nonsmokers. In this article, we confine our analysis to these nonsmoking indoor workers. Survey respondents were weighted to adjust for probability of selection, and the weights were ratio-adjusted to ensure that the sample was representative of the 1990 California population (as assessed by the 1990 census) by age, sex, county/region, education, and race/ethnicity. Details of the survey design, weighting, and variance estimation methods are given in a report available from the state of California.[21]

Whether smoking was restricted at the respondents' work site was assessed using the following questions: "Does your employer have an official policy that restricts smoking in any way?" If the answer was yes, the person was then asked, "Which of the following best describes the smoking policy for indoor public or common areas such as lobbies, rest rooms, and lunchrooms?" and "Which of the following best describes the policy for areas in which employees work?" Response choices included the following: (1) not allowed in any; (2) allowed in some; and (3) allowed in all. On the basis of the answers to the above questions, respondents were categorized into the following four groups: (1) smoke-free work site (smoking banned completely in both public and common areas and in work areas); (2) work-area ban only (smoking allowed in some or all public or common areas but completely banned in work areas); (3) other limited ban (smoking not completely banned in work areas); and (4) no restrictions. Respondents were included in the no-restriction category if they answered no to the first question (whether there was a policy) or if they answered yes to the first question but said that smoking was allowed in all areas in responding to the second two questions (extent of restriction).

Respondents were asked the following question about their usual work area: "Which of the following areas best describes the areas in which you do most of your work?" Response choices included the following: private office with a door, shared office (two to four people) with a door, open area with partitions, open area without partitions, no regular work area, and other type. Exposure to ETS was assessed with the question, "During the past 2 weeks has anyone smoked in the area in which you work?"

Smoking status was assessed according to the standard questions for the United States: "Have you ever smoked 100 cigarettes?" (ever smoker) and "Do you smoke now?" (current smoker).[22-24] Those answering no to either question were considered nonsmokers.

We report the weighted population estimates only; the figures and tables include the 95% confidence limits for all the percentages and odds ratios.[21] Multiple logistic regression was undertaken to assess the odds

ratios for the different independent variables of interest while adjusting for other factors related to the dependent variable.[25] Variance estimation was based on the jackknife procedure.[26]

#### RESULTS ETS Exposure Among Nonsmokers

Overall, 29.2% of nonsmokers who worked indoors reported ETS exposure at the work site, which represents 2 220 513 Californians. Figure 1 shows that exposure to ETS is related to the type of work-site ban reported to be in effect. Only 9.3% of nonsmokers working at a smoke-free work site reported ETS exposure. This percentage increased significantly to 23.2% for those reporting a work-area ban only (95% confidence intervals do not overlap), further increased significantly to 46.7% for those reporting a limited ban, but did not increase significantly at the next level (51.4% for those reporting no ban).

The type of work area was also related to the level of ETS exposure (Fig 2). Exposure was lowest for those working in a private office (19.1%) and was especially high among those with no regular work area (49.2%). The size of the workplace also was related to exposure to ETS; exposure was 33.8% among those working in companies that employ fewer than 50 people but only 24.8% among those in larger workplaces (Fig 2).

Exposure of nonsmokers to ETS is shown for demographic subgroups in Table 1. Men report more ETS exposure than do women (35.8% vs 22.9%); workers under 25 years of age report more ETS exposure than do older workers (41.9% vs 26.4%); and Hispanic workers report a much higher level of exposure (40.0%) than do other ethnic/racial groups. In addition, the rate of ETS exposure decreases with increasing education level; workers with less than a high school education report an exposure rate of 43.1%, while only 18.6% of those with at least a college education report ETS exposure.

The increased exposure to ETS reported by men, younger workers, Hispanics, and those with less education could be confounded with the differential distribution of these workers by the extent of work-site policy, work-area type (office, open area, etc), and workplace size. For instance, college graduates are probably more likely to work in private offices and thus have more control over their immediate environment. Younger workers and minorities might be more likely to work in open work areas or for smaller firms. Thus, to clarify whether the above trends are real and not due to confounding with other variables, we performed a logistic regression analysis using ETS exposure among nonsmokers as the dependent variable.

Table 1.—Demographic Variables and Nonsmokers' Reported Exposure to Environmental Tobacco Smoke (ETS)\*

| Demographic Category            | No.  | Exposed to ETS, %<br>(95% Confidence Interval) |
|---------------------------------|------|--|
| Overall [unkeyable]             | 7162 | 29.2 (27.4-31.0)                               |
| Sex                             |      |  |
| M                               | 3183 | 35.8 (32.7-38.8)                               |
| F                               | 3979 | 22.9 (20.8-25.0)                               |
| Age, y                          |      |  |
| 18-24                           | 1192 | 41.9 (37.1-46.7)                               |
| [is greater than or equal to]25 | 5970 | 26.4 (24.5-28.3)                               |
| Education, y                    |      |  |
| <12                             | 400  | 43.1 (33.9-52.3)                               |
| 12                              | 1893 | 33.9 (30.4-37.4)                               |
| 13-15                           | 2406 | 30.1 (26.9-33.3)                               |

[is greater than or equal to] 16 2553 18.6 (16.9-20.3)

#### Race/ethnicity

|                  |      |                  |
|------------------|------|------------------|
| White            | 5126 | 26.1 (24.3-27.9) |
| Hispanic         | 1086 | 40.0 (34.8-45.2) |
| African American | 355  | 22.7 (15.1-30.3) |
| Asian and other  | 584  | 28.7 (23.4-34.0) |

(\*1) Numbers are weighted percentages.

[unkeyable] Respondents with complete data for all variables in table.

#### Multivariate Analysis of Exposure to ETS

Table 2 shows the adjusted odds ratios from the logistic regression for nonsmoker ETS exposure for each variable adjusted for all the other variables in the table.

As expected, exposure of nonsmokers to ETS was highly related to the extent of the work-site smoking policy. Workers in a company with a work-area ban had adjusted odds of ETS exposure of 2.8 times those who work in some-free work sites, and the odds increased greatly to about 8.5 for those in workplaces with a limited policy or no policy at all. Also, ETS exposure was related to the type of work area: every area type but a share office showed an odds ratio that was significantly higher than a private office. Large workplaces (ie, at least 50 employees) were also significantly related to ETS exposure, but not as strongly as the other workplace variables.

Women and older workers had lower odds of ETS exposure (0.53 and 0.66, respectively) than did men and younger workers. Lower exposure odds for non-Hispanics (0.83) were only of marginal significance (upper 95% confidence limit just greater than 1). Educational level was significant, but only workers who were college graduates had significantly less exposure than those who did not finish high school, and even for the college educated, the 95% confidence limit almost reached 1. Table 2.--Logistic Regression Analysis of Nonsmokers' Likelihood for Exposure to Environmental Tobacco Smoke\*

| Variable                      | Adjusted Odds Ratio [unkeyable] (95% Confidence Interval) |
|-------------------------------|---|
| Extent of smoking ban         |   |
| Smoke-free                    | 1.0   |
| Work-area ban                 | 2.81 (1.92-4.12)  |
| Limited ban                   | 8.57 (5.66-12.98)   |
| No ban                        | 8.46 (5.51-12.99)   |
| No. of employees              |   |
| <50                           | 1.0   |
| [is greater than or equal to] | 0.77 (0.60-0.97)  |
| Work area                     |   |
| Private office                | 1.0   |
| Shared office                 | 1.48 (0.83-2.63)  |
| Partitioned area              | 1.58 (1.16-2.16)  |
| Open area                     | 2.71 (1.63-2.96)  |
| No regular area               | 2.21 (1.85-3.99)  |
| Sex                           |   |
| M                             | 1.0   |
| F                             | 0.53 (0.43-0.64)  |
| Age, y                        |   |
| 18-24                         | 1.0   |
| [is greater than or equal to] | 0.66 (0.51-0.85)  |
| Ethnicity                     |   |

|                               |                  |
|-------------------------------|------------------|
| Hispanic                      | 1.0              |
| Non-Hispanic                  | 0.83 (0.68-1.01) |
| Education, y                  |                  |
| <12                           | 1.0              |
| 12                            | 0.90 (0.52-1.57) |
| 13-15                         | 0.85 (0.51-1.42) |
| [is greater than or equal to] | 0.57 (0.32-0.99) |

(\*2) A total of 7002 respondents with complete data for all variables. [unkeyable] Odds ratios for each variable were adjusted for all other variables in the table.

#### COMMENT

In 1990 in California, nonsmokers working in smoke-free work sites were less than half as likely to report being exposed to someone smoking in their work area than those in workplaces with a policy that applied to work areas only. A nonsmoker in a work site that does not ban smoking in work areas was more than eight times more likely to be exposed to ETS than was a nonsmoker in a smoke-free work site. The odds of exposure to ETS differed very little between work sites with no policy restricting smoking and work sites with only a token level of smoking restriction (ie, a restriction that does not include the work area). Thus, a limited policy offers no advantage over no policy at all.

Furthermore, after adjustment for type of work area, size of the workplace, and the extent of the ban, workers 18 to 25 years of age, males, and those who did not finish high school (compared with college graduates) were significantly more likely to report exposure to ETS. In addition, there was a trend for Hispanics to experience more exposure to ETS. For industries and other institutions in which the employees are likely to be in these demographic groups, high priority should be given to establishing ordinances mandating smoke-free work sites.

In the past, the call for smoke-free work sites has been justified because ventilation systems usually are not able to satisfactorily extract ETS from the air of a smoking section before it is recirculated through the nonsmoking section.[27] The present study underestimates the extent of nonsmoker exposure to ETS because of this recirculation problem as well as the exposure of employees to ETS in common or public areas and potential recall bias by survey respondents. Thus, our results present an even stronger case for the demand for a smoke-free work site.

Over 90% of nonsmokers in smoke-free work sites were protected from ETS exposure. However, 9% of those working in a smoke-free work site and over 20% of those working under a work-area ban did report that someone had smoked in their work area during the 2 weeks before the survey. Violations of smoking restrictions may be caused either by visitors who are unaware of the smoking policy or by workers who smoke who may not know about the ban, may not understand its provisions, or may not think that defying the policy will lead to adverse consequences. Certainly, a smoke-free policy is much less open to interpretation and probably more readily enforceable than a less restrictive policy. Previous studies have shown that how a policy is implemented is very important to its success.[28-31] Finally, the questions asked in the survey may not have fully characterized the policy at the respondent's work site.

Many more California indoor workers (smokers and nonsmokers) in 1990 worked in a smoke-free work site (35.9%) than was reported for such workers for the US population as a whole in 1986 (3%).[9] In 1990 in California, 71.3% of indoor workers reported some type of work-site smoking policy, compared with only 45% nationally in 1986.[9] In addition, according to the 1987 National Survey of Worksite Health Promotion Activities,[32] 40% of

employers indicated that they implemented a work-site policy simply to comply with regulations, which has important implications for tobacco-control activities.

Our data indicate that the only way to protect nonsmokers' health is with a smoke-free work site. The available evidence indicates that bans are accepted by smokers once the bans are implemented.<sup>[14]</sup> Although these facts alone will motivate many employers to take further action, we also must work toward establishing local smoking ordinances that require smoke-free work sites to protect the health of nonsmoking workers.

#### References

1. National Research Council. Environmental Tobacco Smoke: Measures of Exposure and Assessing Health Effects. Washington, DC: National Academy Press; 1986.
2. Centers for Disease Control. The Health Consequences of Involuntary Smoking: A Report of the Surgeon General. Rockville, Md: Office on Smoking and Health, Centers for Disease Control, Public Health Service; 1986. US Dept of Health and Human Services publication 87-8398.
3. Glantz SA, Parmley WW. Passive smoking and heart disease: epidemiology, physiology, and biochemistry. *Circulation*. 1991;83:1-12.
4. Environmental Protection Agency. Health Effects of Passive Smoking: Assessment of Lung Cancer in Adults and Respiratory Disorders in Children. Washington, DC: Environmental Protection Agency; 1990. Publication EPA 600/6-90/0006A.
5. Centers for Disease Control. State tobacco prevention and control activities: results of the 1989-1990 Association of State and Territorial Health Officials (ASTHO) Survey Final Report. *MMWR*. 1991;40(RR-II):1-41.
6. Pertschuk M, Shopland DR. Major Local Smoking Ordinances in the United States: A Detailed Matrix of the Provisions of Workplace, Restaurant, and Public Places Smoking Ordinances. Rockville, Md: National Institutes of Health, Public Health Service, US Dept of Health and Human Services; 1989. National Institutes of Health publication 90-479.
7. Centers for Disease Control. The Health Consequences of Smoking, 25 Years of Progress: A Report of the Surgeon General. Rockville, Md: Office on Smoking and Health, Centers for Disease Control, Public Health Service; 1989. US Dept of Health and Human Services publication CDC 89-8411.
8. Eriksen MP. Workplace smoking control: rationale and approaches. *Adv Health Educ Promotion*. 1986;1:65-103.
9. Pierce JP, Hatzianandreu E. 1986 Adult Use of Tobacco Survey. In: *Smoking and Health: A National Status Report to Congress*. 2nd ed. Rockville, Md: Office on Smoking and Health, Centers for Disease Control; 1987. US Dept of Health and Human Services publication CDC 87-8396.
10. Borland R, Chapman S, Owen N, Hill D. Effects of workplace smoking bans on cigarette consumption. *Am J Public Health*. 1990;80:178-180.
11. Stillman FA, Becker DM, Swank RT, et al. Ending smoking at The Johns Hopkins Medical Institutions: an evaluation of smoking prevalence and indoor air pollution. *JAMA*. 1990;264:1565-1569.
12. Beiner L, Abrams DB, Follick MJ, Dean L. A comparative evaluation of a restrictive smoking policy in a general hospital. *Am J Public Health*. 1989;79:192-195.
13. Sorensen G, Rigotti N, Rosen A, Pinney J, Prible R. Effects of a worksite nonsmoking policy: evidence for increased cessation. *Am J Public Health*. 1991;81:202-204.
14. Borland R, Owen N, Hill D, Chapman S. Changes in acceptance of workplace smoking bans following their implementation: a prospective study. *Prev Med*. 1990;19:314-322.

15. Hudzinski LG, Frollich MD. One-year longitudinal study of a no-smoking policy in a medical institution. *Chest*. 1990;97:1198-1202.
16. Millar W. Evaluation of the impact of smoking restrictions in a government work setting. *Can J Public Health*. 1988;79:379-382.
17. Petersen LR, Helgeson SD, Gibbons CM, Calhoun CR, Giacco KH, Pitchford KC. Employee smoking behavior changes and attitudes following a restrictive policy on worksite smoking in a large company. *Public Health Rep*. 1988;103:115-120.
18. Hill D, Borland R. Adults' accounts of onset of regular smoking: influences of school, work, and other settings. *Public Health Rep*. 1991;106:181-185.
19. Pierce JP, Naquin M, Gilpin E, Giovino G, Mills S, Marcus S. Smoking initiation in the United States: a role for worksite and college smoking bans. *J Natl Cancer Inst*. 1991;83:1009-1013.
20. Waksberg J. Sampling methods for random digit dialing. *J Am Stat Assoc*. 1978;73:40-46.
21. Pierce JP, Goodman J, Gilpin E, Berry C. Technical Report on Analytic Methods and Approaches Used in the Tobacco Use in California, 1990-1991, Report. Sacramento, Calif: California Dept of Health Services; 1992.
22. Centers for Disease Control. Current Estimates From the Health Interview Survey. Hyattsville, Md: US Dept of Health, Education, and Welfare; 1987. Ser 10, No. 166.
23. Centers for Disease Control. Tobacco Use in 1986: Methods and Basic Tabulations From Adult Use of Tobacco Survey. Atlanta, Ga: Office on Smoking and Health, Centers for Disease Control; 1989. Publication 89-615-512:1049.
24. Marcus AC, Shopland DR, Crane LA, Lynn WR. Prevalence of cigarette smoking in the United States: estimates from the 1985 Current Population Survey. *J Natl Cancer Inst*. 1989;81:409-414.
25. SAS Technical Report P-200. Cary, NC: The SAS Institute; 1990:175-230. Release 6.04.
26. Efron B. The Jackknife, the Bootstrap and Other Resampling Plans. Philadelphia, Pa: Society for Industrial and Applied Mathematics; 1982.
27. Burton DJ. Smoke-free work environments require proper ventilation adjustments. *Occup Health Safety*. 1987;56:105-106.
28. Martin MJ, Fehrenbach A, Rosner R. Ban on smoking in industry. *N Engl J Med*. 1986;315:647-648.
29. Sorensen G, Pechacek T, Pallonen U. Occupational and worksite norms and attitudes about smoking cessation. *Am J Public Health*. 1986;76:544-549.
30. Brown RE, McCarthy WJ, Marcus A, et al. Workplace smoking policies: attitudes of union members in a high-risk industry. *J Occup Med*. 1988; 30:312-320.
31. Hocking B, Borland R, Owen N, Kemp G. A total ban on workplace smoking is acceptable and effective. *J Occup Med*. 1991;33:163-167.
32. US Dept of Health and Human Services. National Survey of Worksite Health Promotion Activities: A Summary. Rockville, Md: Office of Disease Prevention and Health Promotion, Public Health Service; 1987.

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05915191 SUPPLIER NUMBER: 12238108 (THIS IS THE FULL TEXT)  
Cigarette smoking bans in county jails. (From the Centers for Disease  
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April 15, 1992

## TEXT:

IN the United States, an increasing number of prisons and jails are adopting restrictions on cigarette smoking[1,2]; these restrictions could affect approximately 10 million inmates.[3] Although the importance of smoking restrictions in the workplace and some public places (e.g., health-care facilities, schools, and public transportation) has been well described,[4] information about smoking restrictions in jails is limited.

During November 1991, the Wisconsin Department of Health and Social Services and CDC conducted a statewide survey of all 72 county jails by mailing a questionnaire to the sheriffs responsible for the jails. The questionnaire asked about the current smoking policy in the jail, plans to change current policy, and the number of admission to the jail during 1990. Of the 72 sheriffs, 64 (89%) participated in the survey.

During 1990, there were approximately 150 000 admissions (a person may have been admitted more than once) to county jails in Wisconsin; the average number of admission per jail was 2405 (range: 60-22 164; median: 900). Information on the length of stay of persons incarcerated and their smoking habits was available for two jails. For the first jail, during November-December 1991, the average length of stay for the 1824 inmates was 18 days (range: 1-495; median:2); 545 (30%) inmates stayed longer than 1 week; and 686 (71%) inmates surveyed smoked cigarettes. For the second jail, during November-December 1991, the average length of stay for the 1052 inmates was 29 days (range: 1-439; median: 6); 508 (48%) inmates stayed longer than 1 week; and 271 (93%) inmates surveyed smoked cigarettes.

Of the 64 jails, 21 (33%) had policies that banned smoking for inmates; 15 (23%) had smoking-restriction policies; and 28 (44%) had no policies to restrict smoking. During 1992, sheriffs at 32 (50%) jails plan to ban or continue their ban on smoking; sheriffs at 16 (25%) jails plan to implement policies or continue policies to restrict smoking; and sheriffs at 16 (25%) jails have no plans to implement smoking restrictions or bans. During 1992, sheriffs at two jails plan to rescind the ban.

Of the 43 jails where inmates were allowed to smoke (15 with and 28 without restrictions), 13 plan to ban smoking in 1992. These bans will prevent nearly 80 000 (60%) inmates statewide from being exposed to tobacco smoke.

CDC Editorial Note: In the United States, restrictions on smoking in public places are increasing in number and comprehensiveness.[5] Although the primary goal of such restrictions is to protect persons who do not smoke from the unhealthy consequences of involuntary exposure to environmental tobacco smoke, they may also help to reduce smoking prevalence by changing attitudes and behaviors of current and potential smokers.[5]

In Wisconsin and other locations, county jail administrators have initiated bans on cigarette smoking because 1) cigarettes are a safety hazard (i.e., cigarettes and materials used to light them may cause fires); 2) cigarettes may be used to smuggle other illicit drugs into jail; 3) awareness has increased about the negative health effects of active and passive smoking; and 4) some jail administrators are increasingly concerned about the legal rights of nonsmoking inmates to a smoke-free

environment.[6,7]

This survey has at least two limitations. First, no information was collected regarding the implementation of the smoking policies (e.g., time of introduction, problems in implementation, and enforcement). Second, only limited information was available on the length of stay of persons incarcerated and their smoking habits.

In the United States, more than one third of persons who are incarcerated are kept in custody in local jails, and the average length of stay in county jails varies.[8] Although most nicotine withdrawal symptoms decrease dramatically during the first week of abstinence[9] (substantially <the average length of stay for a sentenced county jail inmate[8]), it is unknown whether forced abstinence from nicotine encourages smokers to quit. However, if smokers who overcome the most severe nicotine withdrawal symptoms would consider quitting smoking, smoking-cessation counseling programs for these inmates before their release may offer an opportunity to reach otherwise inaccessible segments of the population. In Wisconsin, efforts have been initiated to assess the effects of jail smoking policies on the desire of inmate smokers to quit smoking after release.

#### References

[1.] Romero CA, Connell FA. A survey of prison policies regarding smoking and tobacco. *Journal of Prison and Jail Health* 1988;7:27-36. [2.] Skolnick A. While some correctional facilities go smoke-free, others appear to help inmates to light up. *JAMA* 1990;264:1509-13. [3.] Bureau of Justice Statistics. *Jail inmates, 1990*. Washington, DC: US Department of Justice, June 1991; document no. NCJ-129756. (Bureau of Justice Statistics bulletin). [4.] Public Health Service. *Healthy people 2000: national health promotion and disease prevention objectives — full report, with commentary*. Washington, DC: US Department of Health and Human Services, Public Health Service, 1991; DHHS publication no. (PHS)91-50212. [5.] CDC. *Reducing the health consequences of smoking: 25 years of progress -- a report of the Surgeon General, 1989*. Rockville, Maryland: US Department of Health and Human Services, Public Health Service, 1989; DHHS publication no. (CDC)89-8411. [6.] Burke TW. Second hand smoke and health risks have staff and inmates fuming. *Corrections Today* 1990;152-5. [7.] Cohen F. Exposure to secondary smoke survives 8th amendment attack. *Correctional Law Reporter* 1991;3:57-8. [8.] Bureau of Justice Statistics. *Correctional populations in the United States, 1989*. Washington, DC: US Department of Justice, Bureau of Justice Statistics, 1991; publication no. NCJ-130445. [9.] Cummings MK, Giovino GA, Jaen CR, Emrich LJ. Reports of smoking withdrawal symptoms over a 21-day period of abstinence. *Addict Behav* 1985;10:373-81.

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### Summary

In October 1989, the Association of State and Territorial Health Officials (ASTHO) conducted a survey of state health department personnel regarding programs, policies, and public health systems that stress the prevention and control of the use of tobacco. This survey provided detailed data associated with state tobacco-use control programs and their essential components (e.g., budgets, planning, coalitions, surveillance systems, smoking cessation programs, educational activities, legislative actions, and health department policies). States vary widely in the strength and coverage of their programs for preventing and controlling tobacco use. The ASTHO survey data may be used to help plan and evaluate state health department programs as part of an effort to prevent chronic diseases related to tobacco use. Outcomes of state activities may be evaluated through surveys such as CDC's Behavioral Risk Factor Surveillance System (BRFSS) and the Current Population Survey (CPS) of the Bureau of the Census. Future surveys of state activities for controlling the use of tobacco may be included in the evaluation of the upcoming (1993) American Stop Smoking Intervention Study (ASSIST), which is cosponsored by the National Cancer Institute and the American Cancer Society.

### INTRODUCTION

The Association of State and Territorial Health Officials (ASTHO) conducted a survey in October 1989 to assess progress among the states in the public health practice of preventing and controlling tobacco use. The survey was also conducted to provide states with incentives to create and implement efforts to control tobacco use. The survey covered several components of effective state programs that address such efforts among targeted populations. Additional sources either supplemented or validated state information on tobacco-use control data collected through the ASTHO survey. In the fall of 1989, ASTHO established a network of health professionals responsible for communication between the federal government and state health departments on issues related to tobacco-use prevention and control. As the identifiable contacts for information transfer on tobacco-related matters, these persons served as respondents to the ASTHO survey.

### METHODS

The survey's 10 major sections are 1) background information on tobacco and tobacco control; 2) adult tobacco-use surveillance; 3) adolescent tobacco-use surveillance; 4) reporting and analysis of data on the impact of tobacco-related disease; 5) regulatory activities; 6) coalitions against tobacco use; 7) special populations; 8) community information on education activities; 9) economic incentives, deterrents; and 10) educational institutions. ASTHO contacts solicited the help of state departments of education to answer questions about tobacco-use control activities in educational institutions (public and private schools). This section of the survey assessed the ability of each state to measure progress toward smoke-free schools and the extent to which educational institutions addressed antitobacco education.

Central data sources were used to supplement the survey results for the following areas of this report: legislative activities; taxation; and number of schools, districts, and enrolled students. Sources used to supplement information on legislative issues included State Legislated Actions on Tobacco Issues of the Tobacco-Free America Project [1] and Major Local Smoking Ordinances in the United States, National Institutes of Health. [2] The Tobacco Institute also provided state-specific data on taxation. [3] For information related to schools and school districts, the 1990 World Almanac was used to supplement information supplied by the

states. [4] Finally, previously tabulated data were reviewed and updated by the ASTHO network in December 1990.

#### Data Collection and Analysis

ASTHO sent the questionnaires to all 50 states and the District of Columbia. For the purpose of this report, the District of Columbia is considered a state when summary data are presented. In some cases, supplemental information was obtained by telephone. Responses were tabulated and analyzed using True Epistat and dBase IV. [5,6]

#### RESULTS

The response rates were 100% for both the main section and educational sections.

##### Background Information

As of October 1990, 12 states had developed a specific freestanding plan for preventing and controlling tobacco use. In 22 states, the plan is a part of another plan for controlling chronic disease. Most of these plans address areas related to high-risk populations, health care, smoking cessation issues, worksite policies, and other areas in preventing tobacco use. The 12 freestanding plans were all published after 1980, and most after 1985. [7]

Excluding California, the average state budget devoted to tobacco-related health activities was \$70917. The state funds ranged from no funds (27 states) to \$151 million in California, where a portion of the state cigarette excise tax is earmarked for health activities. [8] In addition to California, six other states had earmarked a portion of the excise cigarette tax for public health activities. Additional funds, including grants, cooperative-agreements, and in-kind services, averaged \$54230 per state (including California).

The sixteen states growing tobacco produced a combined total of \$2381000000 in tobacco agricultural revenue in 1989, representing 1.5% of the total U.S. agricultural farm receipts. [9] The percentage of state agricultural farm receipts generated by tobacco growing ranged from 0.2% (Missouri and Wisconsin) to 21.8% (Kentucky).

##### Surveillance of Adult Tobacco Use

CDC's BRFSS is a telephone-based system that collects yearly data on tobacco use and other health-related behaviors among adults 18 years of age and older. In 1990, 46 states participated in the BRFSS. [10] Twenty-one states collected data on adult smoking prevalence from non-BRFSS sources. Twenty of these states collected data on adult special target populations (blacks, Hispanics, Asians/Pacific Islanders, American Indians, persons with low socioeconomic status, and women of the reproductive age (15-44 years old).

In addition to the BRFSS, state-specific data on tobacco use among adults 16 years of age and older are available from two Current Population Surveys (CPS) that were performed by the U.S. Bureau of the Census in 1985 and 1989. [11,12] The 1985 CPS provided state-specific estimates of both smoking prevalence and smokeless-tobacco use. The 1989 survey provided information only on smoking prevalence.

##### Surveillance of Youth Tobacco Use

No national system exists for monitoring state-specific tobacco use by adolescents. However, CDC has developed a standard survey (the Youth Risk Behavior Survey [YRBS]) to collect comparable school-based data from the states. [13] By the completion of the survey in January 1990, three states had participated in the YRBS; 19 additional states had participated by the end of 1990. From 1986-1990, 32 states reported collecting data on tobacco use among adolescents from sources other than the YRBS. The respondents were asked follow-up questions to determine if these surveys

covered the basic question topics from the YRBS. The surveys examined such specific areas as tobacco experimentation, current tobacco use, age of initiation of tobacco use, and smokeless tobacco use. Twenty-six states had information on experimentation with tobacco-use, 32 states collected data on prevalence of tobacco use, 19 states had information on age of initiation of tobacco use, and 25 states had information on smokeless tobacco use.

#### Tobacco-Related Disease Impact

##### Data-Reporting and Analysis

All 51 state health departments used a software package developed by the Minnesota Department of Health, the Smoking-Attributable Mortality, Morbidity, and Economic Costs (SAMMEC), to obtain data on smoking-attributable deaths and economic costs. [14]

In five states, a record of the decedent's smoking history was required on death certificates. Four states reported data on smoking-attributable hospital discharges, and eight states have information on smoking-attributable state-funded medical care costs. In 33 states, maternal smoking history was recorded on birth certificates.

#### REGULATORY ACTIVITIES

##### Smoking in Public Places

In 1989, 45 states had laws restricting smoking in public places; in 38 of these states, the restrictions also applied to public-sector workplaces. In 17 states, these restrictions extended to private-sector workplaces. [1] The Surgeon General's 1989 report on smoking and health defined extensive regulations as those that restricted smoking in the private-sector workplace. [15]

Local smoking ordinances in cities and counties encompassed a wide range of public settings, including restaurants, elevators, hotels, libraries, museums, retail stores, schools, public transit, and other enclosed public places. In all, 490 local ordinances restricted or prohibited smoking in public places.

##### Health Department Tobacco-Use

##### Policies

With the exception of North Carolina and Virginia, all state health departments had a written policy on smoking in state health department buildings in 1989. Twenty-four (47%) of these states completely banned smoking in state health department facilities; 31 states (61%) permit the sale of tobacco products in health department buildings.

##### Restrictions on Minors' Access to

##### Tobacco Products

As of October 1990, 46 states prohibited the sale of tobacco products to underaged persons. The minimum age for purchasing tobacco varied from 16 years of age (Kentucky, Virginia) to 19 years of age (Alabama, Alaska, Utah); the most common minimum age is 18 years of age (37 states). [1,16] Nine states restricted the placement of vending machines that contain tobacco products; one state (Colorado) banned the sale of smokeless tobacco in vending machines, and another (Utah) banned the sale of all tobacco products in vending machines. Twenty-two states required a state-issued retail tobacco license for vendors selling tobacco products. The fees for these retail licenses ranged from \$0 to \$250 (average: \$33).

##### Restrictions on Tobacco Advertising

Two states (Massachusetts and Utah) have policies that restrict advertising of tobacco products on state property or property under the state's jurisdiction. Local policies in six states (Arizona, California, Colorado, Hawaii, Massachusetts, and Nebraska) restrict advertising of tobacco products on local government property, such as buses, transit

stations, or sports facilities.

#### Tobacco-Control Coalitions

As of October 1990, 50 states had tobacco-related working groups or coalitions of individuals or agencies concerned with preventing and controlling tobacco use. [17] The coalition members represent the health professions, the general community, groups concerned with legislation and policy, and educational groups. Eighty-two percent of these state coalitions carried out public education and information activities, 72% addressed legislative efforts, 48% educated professionals, 44% worked on developing a plan for tobacco-use control, and 26% carried out research and evaluation. The average funding for coalitions in reporting states (excluding California) is \$5536.

#### Special Populations

Special populations targeted for intensive tobacco-use prevention and control efforts by the U. S. Department of Health and Human Services include adolescents, women of reproductive age (15-44 years old), Asians/Pacific Islanders, American Indians, Hispanics, and blacks. [18] Forty states have programs (in addition to the BRFSS) that include education and information for some or all of these groups. Thirty-three states had cessation programs, and 26 states collected behavioral data on these high-risk populations.

#### INFORMATION/EDUCATION

##### Public Information Activities

Twenty-two state health departments produced public service announcements designed to prevent tobacco use. Forty-five states used public service announcements produced by federal agencies (such as the Office on Smoking and Health and the National Cancer Institute). Thirty-two states initiated public information campaigns in their states within the last 2 years. These campaigns used various forms of media (billboards, radio, television, etc.).

##### Smoking Cessation Programs

Thirty-five states offered smoking cessation programs to state health employees, and 26 states offered such programs to members of the community.

##### Economic Incentives and Deterrents

Colorado, Kansas, and Washington were the only states that had health benefits packages with differential rates for smokers and nonsmokers for state government employees. Fourteen states reported having third-party payers of medical care that offered differential rates to consumers, and seven states had third-party payers of medical care that offered reimbursement for treatment of tobacco addiction. These data may be an underestimate, however, because some large national insurers sold policies in many states, (e.g., Blue Cross and Blue Shield Company of Southwestern Virginia). [19] State tobacco excise taxes ranged from 2 cents per pack in North Carolina to 41 cents per pack in Texas. [3] The average state excise tax collected per pack was 23 cents. The lowest tax rates were primarily in the tobacco-producing states.

##### Educational Institutions

Thirty-nine states had state laws that restricted tobacco use in schools. Twenty-seven states banned smoking for students; only eight states banned smoking for both students and staff. In 16 states, the state department of education reported having formal policies on tobacco use in schools. Only two states, Ohio and Nevada, provided information on private primary and secondary schools.

There are 15323 school districts in the United States. [4] Among the 25 states reporting information on policies in school districts, 2311 (30.8%) of the school districts in these states banned smoking for both

students and staff.

Among the states with information on smoking policies in public primary schools, 4468 (33.9%) of these schools banned smoking for both students and staff. Among the reporting states, 21097 (96.2%) schools completely banned smoking for students (i.e., students could not smoke on school grounds). Within the 26 states that provided data on tobacco-use education, 18588 of 21129 (87.9%) public primary schools taught tobacco-use prevention.

Among the states reporting information on smoking policies in public secondary schools, 1368 (21.2%) of 6459 schools completely banned smoking for both students and staff, and 7481 (83.1%) completely banned smoking for students. For the 23 states that provided information on tobacco-use education, 7623 of the 9456 public secondary schools (80.6%) taught tobacco-use prevention.

Among 12 states that had provided information, approximately 2.8 million (48.5%) public primary and secondary students attended smoke-free schools.

#### DISCUSSION

The 1989 ASTHO survey provides data on the activity of all 51 states regarding the prevention and control of tobacco use. States varied greatly in their approaches to the control of tobacco use. Some states had extensive surveillance systems and programs in place, whereas others had only limited programs and funding. Data from the 1989 ASTHO survey and subsequent surveys may be linked to state-specific data on smoking prevalence, cigarette consumption, and smoking cessation. These state-specific data (from CDC's BRFSS and the Bureau of the Census' CPS) may be used to assess the outcome of recent state activities in preventing and controlling tobacco use. A national guide that may direct state progress in these and other areas of concern is Healthy People 2000: National Health Promotion and Disease Prevention Objectives, which lists 16 tobacco-related objectives for the year 2000. [18]

Little information about programs and policies to prevent tobacco use among young persons is available either to the ASTHO tobacco-control network or to state departments of education. Fewer than half of the states reported any information related to the education portion of the survey. Consequently, selective reporting from certain states may overstate the percentage of smoke-free schools. In addition, those states that reported 100% prevalence of tobacco-use education assumed, but did not verify, total compliance to state requirements. Efforts to collect these data are important in assessing the overall public health approach to preventing and controlling tobacco use.

Because the 1989-90 ASTHO survey provided baseline information on broad activities to prevent and control tobacco use, subsequent surveys may be useful in assessing states' progress. To conduct such assessments, state-specific objectives should be established, and a system for measuring states' progress in these objectives should be implemented. The evaluation could initially be applied to the different control activities covered by the survey (such as education, coalitions, and surveillance). An overall measure for each component for controlling and preventing tobacco use should then be developed. The Rocky Mountain Tobacco-Free Challenge has included an evaluation of state activities on tobacco-use control. [20] Initiated in 1988, this program is a regional effort among eight states to reduce tobacco use and chronic diseases. [21]

The ASTHO survey is an important baseline for monitoring tobacco-use control programs at the state and local levels. Future surveys may provide data that can be used to measure the effects of planned intervention programs, such as the National Cancer Institute's ASSIST, which will begin

in 1993. [20] These surveys may also provide means to measure progress toward the year 2000 health objectives for the nation. [18]

#### Appendix

Tobacco-related objectives, outlined in Healthy People 2000: National Health Promotion and Disease Prevention Objectives, provide a national guide for assessing progress in preventing and controlling tobacco use. The following is reprinted from Healthy People 2000. [18]

The Year 2000 Objectives for the Nation call for the following tobacco-related objectives:

3.1 Reduce coronary heart disease deaths to no more than 100 per 100000 people.

3.2 Slow the rise in deaths from to achieve a rate of no more than 42 per 100000 people.

3.3 Slow the rise in deaths from chronic obstructive pulmonary disease to achieve a rate of no more than 25 per 100000 people.

3.4 Reduce cigarette smoking to a prevalence of no more than 15% among people aged 20 and older.

3.5 Reduce the initiation of cigarette smoking by children and youth so that no more than 15% have become regular cigarette smokers by age 20.

3.6 Increase to at least 50 percent the proportion of cigarette smokers aged 18 and older who stopped smoking cigarettes for at least one day during the preceding year.

3.7 Increase smoking cessation during pregnancy so that at least 60% of women who are cigarette smokers at the time they become pregnant quit smoking early in pregnancy and maintain abstinence for the remainder of their pregnancy.

3.8 Reduce to no more than 20% the proportion of children aged 6 and younger who are regularly exposed to tobacco smoke at home.

3.9 Reduce smokeless tobacco use by males aged 12 through 24 to a prevalence of no more than 4%.

3.10 Establish tobacco-free environments and include tobacco use prevention in the curricula of all elementary, middle, and secondary schools, preferably as part of quality school health education.

3.11 Increase to at least 75% the proportion of worksites with a formal smoking policy that prohibits or severely restricts smoking at that particular workplace.

3.12 Enact in 50 States comprehensive laws on clean indoor air that prohibit or strictly limit smoking in the workplace and enclosed public places (including health care facilities, schools, and public transportation).

3.13 Enact and enforce in 50 States laws prohibiting the sale and distribution of tobacco products to youth younger than age 19.

3.14 Increase to 50 the number of States with plans to reduce tobacco use, especially among youth.

3.15 Eliminate or severely restrict all forms of tobacco product advertising and promotion to which youth younger than the age of 18 years are likely to be exposed.

3.16 Increase to at least 75 percent the proportion of primary care and oral health care providers who routinely advise cessation and provide assistance and followup for all of their tobacco-using patients.

#### References

[1] Tobacco-free America; state legislated actions on tobacco issues. Washington, DC: Legislative Clearinghouse, 1990.

[2] National Institutes of Health. Major local smoking ordinances in the United States: a detailed matrix of the provisions of workplace, restaurant, and public places smoking ordinances. Washington, DC: US



Department of Health and Human Services, Public Health Service, National Institutes of Health, 1989; (DHHS) publication no. (NIH) 90-479.

[3] Tobacco Institute. Cigarette Tax Data. Monthly state cigarette tax report, July 1990. Washington, DC: Tobacco Institute, 1990.

[4] The World Almanac 1990. New York: Newspaper Enterprise Association, 1990.

[5] True Epistat. Epistat Services. 3rd Edition. Richardson, Texas: True Epistat, 1989.

[6] DBASE IV. Asthlon-Tate Corporation, Torrance, California, 1988.

[7] CDC. State tobacco-use prevention and control plans. MMWR 1990;39(8):133-6.

[8] Bal DG, Kizer KW, Felten PG, Mozar HN, Niemeyer D. Reducing tobacco consumption in California: development of a statewide anti-tobacco use campaign. JAMA 1990;264:1570-4.

[9] US Department of Agriculture. Tobacco situation and outlook report. Washington, DC: US Department of Agriculture, Commodity Economics Division Economic Research Service, 1990 publication no. TS-213.

[10] CDC. Behavioral Risk Factor Surveillance, 1988. MMWR 1990;39:1-21.

[11] Marcus AC, Shopland DR, Crane LA, Lynn Wr. Prevalence of cigarette smoking in the United States: estimates from the 1985 Current Population Survey. JNCI 1989;81:409-14.

[12] Novotny TE, Romano RA, David RM, Mills SI. the public health practice of tobacco control: lessons learned and directions for the states in the 1990s. Annu Rev Public Health (in press).

[13] Harel Y, Kann L, Collins J, Kolbe L. Implementing the Youth Risk Behavior Surveillance System: a progress report. In: Agenda of the Fifth National Conference on Chronic Disease Prevention and Control: From 1990 to 2000. Detroit, Michigan, October 1990:47.

[14] CDC. Smoking and health; a national status report: a report to Congress. 2nd ed. Rockville, Maryland: US Department of Health and Human Services, Public Health Service, 1990; DHHS publication no. (CDC) 87-8396.

[15] CDC. Reducing the health consequences of smoking: 25 years of progress. Report of the Surgeon General. Rockville, Maryland: US Department of Health and Human Services, Public Health Service, 1989; DHHS publication no. (CDC) 89-8411.

[16] CDC. State laws restricting minors' access to tobacco. MMWR 1990;39(21):349-53.

[17] CDC. Progress in chronic disease prevention. State coalitions for prevention and control of tobacco use. MMWR 1990;39(28):476-85.

[18] US Department of Health and Human Services. Healthy people 2000: national health promotion and disease prevention objectives. Washington, DC: US Department of Health and Human Services, Public Health Service, 1990; DHHS publication no. (PHS)90-50212.

[19] Wroblewski M. Insurance incentives for not smoking. NY State J Med 1985; 85:309.

[20] Novotny TE, Thomas WI. The Rocky Mountain Tobacco-Free Challenge: year number two: evaluation report 1990. Rockville, Maryland: US Department of Health and Human Services, Public Health Service, Office on Smoking and Health, 1990.

[21] CDC. State-based chronic disease control: the Rocky Mountain Tobacco-Free Challenge. MMWR 1989; 38:749-52

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The politics of local tobacco control.  
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TEXT:

BEFORE the emergence of the non-smokers' rights movement, virtually all legislative and regulatory activity related to tobacco took place at the federal and state levels. The tobacco industry combined its money and lobbying skills to maintain an impressive record of political victories.

[1,2] In contrast, the non-smokers' rights movement emerged around the country during the 1970s as a grass-roots campaign. [3] In 1981, after several unsuccessful attempts to enact state legislation in California, one such grass-roots nonsmokers' rights group organized as American for Nonsmokers' Rights to promote local legislation in California and elsewhere. They believed that local legislators would be more sensitive to constituents and less responsive to campaign contributions and pressure from out-of-town tobacco industry lobbyists. [1,4] This strategy succeeded. By 1986, more than 75 ordinances had been enacted in California alone. [3] Nationwide by 1990, over 400 local ordinances had been passed. [5]

Recent local campaigns in California illustrate the tobacco industry's strategy at the local level and its successes and failures. At first, the tobacco industry tried to use the same lobbying techniques at the local level that worked at the national level, with little success. To counter the nonsmokers' rights movement, the tobacco industry has developed new strategies for the local level.

This article reports the results of several case studies in California that illustrate these strategies and how the health community has responded to them. These case studies were conducted by attending public hearings reviewing newspaper articles, analyzing financial disclosure statements, reviewing materials distributed by the tobacco industry, health groups, and associated organizations, and interviewing participants (local officials, business representatives, restaurant owners, health agency employees, tobacco control activists, tobacco industry lobbyists, smokers' rights activists, and journalists). While these case studies are all from California, they are representative, to a greater or lesser degree, of activities throughout the United States.

A few key people with ties to the tobacco industry are appearing in communities throughout California to ward off local ordinances controlling tobacco. These individuals often attempt to conceal their tobacco industry ties by creating "front" organizations. The most intensive effort has been the organization of smokers into a "grass-roots" movement to oppose local legislation. Additionally, tobacco industry interests have played a significant role in creating pseudo business coalitions to fight specific ordinances. The industry and its front groups make unsubstantiated claims to sway public and decision-maker opinions in their favor.

In contrast to the tobacco industry's systematic activity, the tobacco control advocacy groups have followed many different paths, from watching from the sidelines and making little effort to intervene to calling the plays and guiding the decision makers through potential obstacles. Despite the tobacco industry's superior financial resources, enactment of a specific local ordinance depends not on the tobacco industry

but on how seriously the health advocates mobilize in support of the legislation. When the health community makes a serious commitment of time and resources, it wins, but when the health community fails to make such a commitment, the tobacco industry prevails, more by default than because it has superior financial resources.

#### CREATING THE SMOKERS' RIGHTS MOVEMENT

The emergence of nonsmokers' rights and environmental tobacco smoke (ETS) as important public issues, particularly since the 1986 Surgeon General's report on passive smoking, [6] has created a serious problem for the tobacco industry. The 1990 Environmental Protection Agency (EPA) draft report [7] that identified ETS as a class A (known human) carcinogen and the 1991 report [8] that implicated ETS as a cause of heart disease have increased popular pressure for restrictions on smoking. Increasing restrictions on smoking in public places to protect nonsmokers from the toxins in ETS undermines the social acceptability of smoking. Decreasing the social acceptability and mandating restrictions on where and when one can smoke, in turn, discourage children from starting to smoke and facilitate adults' decisions to cut down or stop smoking. [9] While generating significant health benefits for smokers and nonsmokers, this drop in cigarette consumption translates into fewer sales and lower profits for the tobacco industry. [10]

As the tobacco control groups, backed by increasingly compelling scientific evidence, have become more formidable adversaries at the local level, the tobacco industry has recognized the need to place more emphasis on battling local legislation. In 1986, Raymond Pritchard, chairman of the board of Brown and Williamson Tobacco said:

Our record in defeating state smoking restrictions has been reasonably good. Unfortunately, our record with respect to local measures . . . has been somewhat less encouraging. We must somehow do a better job than we have in the past in getting our side of the story told to city councils and county commissions. Overtime, we can lose the battle over smoking restrictions as decisively in bits and pieces—at the local level—as with state or federal measures [emphasis added]. [11]

Since then, the tobacco industry has moved aggressively to counter the popular local pressure for smoking restrictions by seeking to develop its own grass-roots "smokers' rights" movement. In 1990, RJ Reynolds chief executive James Johnston stated, "This is something I wish we had done a decade ago." [12]

By attempting to counter grass-roots pressure for nonsmoker protections, the tobacco industry had to confront the fact that it had little credibility with the public. A national poll that was conducted for the Tobacco Institute in 1978 [13] highlighted the tobacco industry's problem; it concluded that "favorable attitudes toward the tobacco industry are at their lowest ebb," and "more people say they would vote for than against a political candidate who takes a position favoring a ban on smoking in public places." Another study done for the Tobacco Institute in 1982 [14] found that overt industry opposition to proposed nonsmokers' rights legislation actually increased support for the legislation: "Knowledge of tobacco company support [on an issue] does move a significant number of respondents into the 'yes' column [supporting a nonsmokers' rights measure]." In 1989, of nine nationally recognized special interest groups, the Tobacco Institute had the lowest public credibility and the most negative ratings. [15] As a result, the institute's lobbyists tried to stay out of public view. For example, the Tobacco Institute's West Coast lobbyist, Ron Saldana, attended hearings on local smoking control

ordinances but rarely testified publicly; when asked why, he said, "I've learned from experience that as soon as I'm identified as a representative of the Tobacco Institute, I lose all credibility. They just sneer us away . . . so I try to work behind the scenes whenever I can." [16] The industry-created smokers' rights groups provide a local identity and mechanism for funneling tobacco industry resources into the fight against local legislation without the overt appearance of the tobacco industry.

Philip Morris and RJ Reynolds, the two dominant US cigarette manufacturers, both have active programs to identify smokers and mold them into a political force to counter genuine grass-roots pressure for nonsmoker protections. These programs use major computer databases, professional public relations firms, sophisticated telephone and mail campaigns, and glossy publications. Smokers have been identified over the past few years through rebate coupons and correspondence with the tobacco companies. Philip Morris has a database with 12 million smokers that includes information on their jobs and on their history of political involvement. [17] Neither company will disclose how much money it has devoted to the smokers' rights effort. [2]

The cigarette manufacturers use publications such as Philip Morris Magazine and newsletters such as Smokers' Advocate (Philip Morris) and Choice (RJ Reynolds) to recruit and "educate" smokers. In 1988, Philip Morris Magazine claimed it had 11 million nonpaying readers, making the magazine, according to the company, the nation's fifth largest periodical.

Smokers are encouraged to become a politically active force by signing petitions, writing letters, making phone calls, and showing up as a group at city or county meetings where smoking restrictions are being discussed. Toll-free telephone numbers are used to assist individuals in reporting pending legislation and to oppose it. When the companies receive notice of a proposed ordinance, an "Action Alert" or "Priority Letter" is sent out to the local people on the database to mobilize action against the ordinance.

In the past 3 years, RJ Reynolds and other tobacco companies have claimed to establish at least 600 smokers' rights groups across the country. [18] Using the company's mailing list, the meetings are publicized to local residents and are organized using a network of political consultants.

For example, RJ Reynolds consultant Tim Pueyo of San Francisco, Calif, who is active throughout northern California, held an organizing meeting in Eureka, Calif, on September 25, 1990, which was attended by approximately 40 people. Pueyo encouraged the smokers to organize a grass-roots group to meet once a month. He told the group to contact him if they heard about any smoking restrictions in the area, so that he could come in and help the group get organized to defeat the ordinance. He called the nonsmoking activists "hypochondriacs," and he sought to undermine the scientific evidence that ETS is dangerous [6-8] by stating, "The health question is extremely debatable." He told the group that RJ Reynolds could not give out free cigarettes because it would then be considered to be paying the participants to come, but that it was legal to distribute ashtrays and lighters. Pueyo also suggested a catchy name for the group, such as TUFF, Taxpayers United for Fairness.

In June 1990, a group called TUFF Taxpayers United for Freedom was formed in Lodi, Calif, 400 km southeast of Eureka, to oppose a nonsmoking ordinance being considered there. [19] (After failing to stop the Lodi City Council from passing the ordinance, TUFF mounted an unsuccessful campaign to have it repealed in a referendum.) The TUFF group claimed to be a grass-roots organization with no ties to the tobacco industry. Adam Dados, a spokesperson for the group, said, "We've only received some ashtrays and

lighters from the tobacco companies."

The smokers' rights campaign is clearly a new fixture on the tobacco control scene, which must be anticipated in any tobacco control effort. It is also reasonable to expect the tobacco industry to continue to build on its database and become more sophisticated in its use.

Referendum campaign organizations, such as Sacramentans for Fair Business Policy, are also created by the tobacco industry in an attempt to overturn ordinances enacted by a local legislative body. By forcing a referendum, the industry seeks to move decision making away from the elected body that approved the ordinance to a vote by the public, in hope that the industry's superior financial and advertising clout will influence the decision process. To date, however, all attempts by the tobacco industry to overturn nonsmokers' rights legislation by referendum have failed. [19,20]

#### BEVERLY HILLS, CALIF

In addition to smokers' rights groups, the tobacco industry has also created groups with names suggesting that they are independent business or restaurant coalitions, such as the Beverly Hills Restaurant Association (BHRA), to lobby local legislators on specific ordinances without divulging the nature or extent of their ties to the tobacco industry. Similar to smokers' rights groups, these organizations provide a local identity and mechanism for the tobacco industry to allocate resources against local legislation. Beverly Hills, Calif, illustrates how the industry has used such organizations.

In 1987, the Beverly Hills City Council proposed a 100% smoke-free requirement for the city's restaurants. This would have been only the second such ordinance in the country and the first in California. For the proposal to become law, the city council had to approve it on two readings. At first reading, the ordinance passed unanimously without strong public opposition. Between the first and final city council vote, the Tobacco Institute hired a political consultant, Rudy Cole, to create the BHRA to oppose the ordinance. [21] The Tobacco Institute's role in creating the BHRA was not disclosed at the time. At the second reading, Cole appeared as spokesperson of the newly formed BHRA to protest the ordinance. Nonetheless, the city council unanimously voted in favor of a smoke-free restaurant ordinance.

Michael Kantor, one of the most prominent attorneys in the politically influential law firm of Mannatt, Phelps, Rothenberg, and Phillips, was hired to represent the BHRA, with the legal bills being paid by the Tobacco Institute. [22] The BHRA attempted to get a temporary court order to stop the implementation of the ordinance; however, the effort failed. [23] Kantor then filed a lawsuit against the city claiming that the ordinance was unconstitutional, discriminatory, and disastrous for business. This action also failed. [24]

Having failed to void the law in court, the BHRA claimed that restaurants had suffered a 30% drop in business after the ordinance went into effect. [25] This claim was never challenged or investigated by the health community, despite the fact that only about 25% of adults in California smoked at that time. As a result, the report of a serious impact on business was widely accepted. Four months after the ordinance was enacted, the city council, at the urging of the BHRA, voted five to zero to allow restaurants to establish smoking sections of up to 40% of their seating. The tobacco industry claimed a victory because the Beverly Hills experience represented the first time a nonsmokers' rights ordinance that was on the books had been weakened after it was enacted. The fact that the industry worked through the BHRA to mobilize local restaurants, rather than

directly appearing as the Tobacco Institute, played an important role in its success.

#### LOS ANGELES, CALIF

Three years later, the Los Angeles City Council considered an ordinance similar to the original Beverly Hills ordinance, which would have prohibited smoking in all restaurants. In 1990, Councilman Marvin Braude introduced the ordinance because of concern raised by the EPA report that identified ETS as a class A carcinogen. [7] In Los Angeles, the tobacco industry's campaign against the ordinance illustrates the effective use of both a front group and direct lobbying by the tobacco industry. These activities by the tobacco industry, combined with the failure of the health community to organize effectively in support of the ordinance, contributed to its failure.

Just as in Beverly Hills, no Los Angeles restaurant trade organization existed prior to the ordinance's introduction. During the summer of 1990, after the ordinance was proposed, Rudy Cole created Restaurants for a Sensible Voluntary Policy (RSVP). [26] As in Beverly Hills, the tobacco industry's involvement was not disclosed. However, after the final city council vote that defeated the proposal, Cole, under pressure from the media, acknowledged that RSVP received money from Philip Morris and from the Tobacco Institute, but he refused to say how much. The Tobacco Institute also refused to disclose the amount of money spent in Los Angeles.

The RSVP group put together a powerful team in its effort to fight Councilman Braude's proposal. The group hired the same international public relations and advertising firm that the Tobacco Institute, Philip Morris, and RJ Reynolds use (Ogilvy and Mather) and the same law firm that Philip Morris and the BHRA use (Manatt, Phelps, Rothenberg, and Phillips). In fact, at the same time that the Los Angeles office of Manatt, Phelps, Rothenberg, and Phillips was representing RSVP, the Washington, DC, office was busy dealing with the EPA on behalf of Philip Morris, trying to head off the EPA report [7] that motivated Councilman Braude in the first place.

The tobacco industry also attempted to mobilize local smokers in Los Angeles. During August 1990, a week prior to the first committee hearing, Philip Morris sent a Priority Letter to local smokers listed in the company's database, urging them to contact the mayor and city council members by phone or by "handwritten" letter to express opposition to the "unprecedented, discriminatory legislation." The addresses and telephone numbers of the elected officials were included, as well as "talking points" that could be used in communications. A toll-free telephone number was given to answer any questions.

On August 13, 1990, the Environmental Quality and Waste Management Committee, of which Councilman Braude was the chairperson, and the Arts, Health, and Humanities Committee jointly considered the proposal to make all restaurants smoke-free. The RSVP group recruited restaurant owners and civic leaders, such as the president of the Los Angeles Business Council, to testify at the hearing. Representatives of health groups, including the American Lung Association (ALA), American Cancer Society (ACS), and American Heart Association (AHA), testified in favor of the ordinance. The committee voted three to one in favor of the proposal, directing the city attorney to write an ordinance to present to the full council.

Having lost the first vote, Cole concentrated on molding the restaurants into a political force. He recruited members through mass mailings, telephone calls, and personal visits. In September 1990, RSVP conducted a letter-writing campaign for restaurants to contact the city council members. The letters were compiled and submitted to all the council

members the day before the final vote. The text of most of the letters was exactly the same; all the restaurant owner had to do was sign and post it, with RSVP sending out petitions to restaurants for employees and customers to sign in opposition of the proposal.

To persuade council members that such an ordinance would adversely affect business, RSVP hired Laventhol and Horwath, one of the six largest national firms of certified public accountants, to conduct an economic impact study of the proposed ordinance. [27] The report was made available to the council the day before the vote. The study compared Beverly Hills restaurants' sales during the 3 months of a smoke-free ordinance in 1987 and the same 3 months of the previous year and found an average decrease in business of 6.7%. The discrepancy between this figure and the 30% that the tobacco industry continues to use was never explained. Based on the Beverly Hills data, the study projected a 5.5% decline in sales in Los Angeles and 3300 fewer jobs. According to the report, Los Angeles could also lose about \$1.5 million a year in sales tax revenues and \$148 million in business. Councilman Braude questioned the accuracy of these conclusions, but because the report wasn't released until the day before the vote, it was not subjected to any independent scrutiny.

At the public hearing on the ordinance on October 16, 1990, RSVP claimed to represent 1000 of the approximately 8000 restaurants in Los Angeles. A roster that was provided to all council members the day before the vote listed only 440 restaurants. In a survey of a sample of those 440 restaurants, 88 (20%) stated that they were not members of RSVP. [19]

The funding of RSVP is also in question. While admitting to taking money from the tobacco industry, RSVP claimed to be financed substantially from its members. Cole said that there is a membership fee of \$10 for smaller restaurants and between \$100 and \$500 for larger restaurants. However, in a survey of restaurants listed as members of RSVP, only 13% said they had contributed money. Thus, even if all the restaurants that contributed to RSVP donated the \$500 maximum, this would yield only \$28,600. [19] To employ an expensive law firm and an international public relations firm, in addition to the costs of mailings to restaurants, the Laventhol and Horwath study, and Cole's salary, the budget for RSVP must have substantially exceeded the donations from restaurants. Funding and expenditure disclosure for RSVP is not required by law because RSVP represents itself a trade organization, not a lobbying group or campaign committee, so the precise role of the tobacco industry cannot be determined.

In addition to campaigning through RSVP, the tobacco industry directly lobbied council members. For example, council members were contacted by Alma Fitch, a lobbyist on retainer with Philip Morris, [28] who encouraged a negative vote on the ordinance. The tobacco industry also made campaign contributions to several members of the city council (Table 1).

On October 16, 1990, the city council heard testimony on the proposal. Citing the health evidence against ETS, the Los Angeles County Medical Association, the AHA, the ALA, the ACS, and Americans for Nonsmokers' Rights, among others, urged the council to vote for the proposed smoke-free restaurant ordinance.

During the hearing, Cole openly consulted with tobacco industry representatives, including consultant Fitch and Tobacco Institute lobbyist Saldana. Two Ogilvy and Mather employees were present to assist in the planning, pass out press releases, and organize a press conference immediately following the vote. In testimony against the ordinance, RSVP organized restaurants, business groups, and a representative of a hotel and

restaurant workers union. The RSVP group banked heavily on the argument that smoke-free restaurants would cause a drop in business, resulting in layoffs and lost revenue.

The council voted six to six; proponents fell two votes short of the necessary eight for passage (three council members were absent). The tobacco industry succeeded, via RSVP, in defeating the ordinance.

Los Angeles is an example where elected officials, rather than health proponents, were the key force behind the proposal. Although the voluntary health agencies testified at both hearings, there was no substantial attempt to mobilize support for the ordinance among their membership. In fact, a community health coalition was not formed to push for the ordinance until the final hours before the vote. In contrast to the voluntary health agencies, the grass-roots lobbying group--Americans for Nonsmokers' Rights--mobilized its local membership in a letterwriting campaign. This campaign, while not effective enough to secure passage of the ordinance, did influence some votes; Councilman Zev Yaroslavsky reported that the ratio of his mail in support of the ordinance was 20:1. [29]

The lack of sustained activity by the health community contributed to the proposal's defeat. Arias stated that the three voluntary health agencies spent only 1 1/2 days actively lobbying for the

Table 1.--Los Angeles (Calif) City Council Members' Receipt of Tobacco Industry Money and Their Vote on the Proposed Ordinance to Prohibit Smoking in All Restaurants (\*)

| Tobacco Industry Campaign |                   |        |      |
|---------------------------|-------------------|--------|------|
| Council Members           | Contributions, \$ |        | Vote |
| Nate Holden               | 1000              | No     |      |
| Michael Woo               | 1000              | No     |      |
| Gloria Molina             | 900               | No     |      |
| Richard Alatorre          | 500               | Absent |      |
| Hal Bernsen               | 500               | No     |      |
| Robert Farrell            | 500               | Yes    |      |
| John Ferraro              | 500               | No     |      |
| Joy Picus                 | 500               | Yes    |      |
| Ernani Bernardi           | 0                 | Yes    |      |
| Marvin Braude             | 0                 | Yes    |      |
| Joan Milke Flores         | 0                 | Absent |      |
| Ruth Galanter             | 0                 | Yes    |      |
| Gilbert Lindsay           | 0                 | Absent |      |
| Joel Wachs                | 0                 | No     |      |
| Zev Yaroslavsky           | 0                 | Yes    |      |

(\*) From January 1, 1989, through December 31, 1990. [26,40,41] The vote was taken on October 16, 1990.

ordinance: "If we had 2 weeks of full-time effort, then we could have had more success." If the health agencies had formed a Los Angeles community coalition and had mobilized all their volunteers and members, perhaps the proposal would have passed, despite the effort made by the tobacco industry.

#### SACRAMENTO, CALIF

At about the same time as the Los Angeles vote, the city and county of Sacramento, Calif (two distinct political entities), each enacted strong ordinances prohibiting smoking in all public and private workplaces and all public places, including restaurants. In contrast to Los Angeles, where there was ineffectual activity on the part of the health agencies, in Sacramento the ALA prompted the ordinance and took an active role in



shaping the law and ensuring its passage.

#### The Foundation for Action

The most significant factor in Sacramento's success in passing this progressive tobacco control law was the strong connection between the ALA and community leaders. The ALA has recruited influential civic leaders from various backgrounds to serve on its 35-member board of directors. It was no coincidence that a county supervisor, a city council member, and the chairperson of the Environmental Commission—individuals who were instrumental in passing the ordinance—had served as volunteers or staff members of the Sacramento ALA. The strength of their influence was illustrated by the pivotal role they played in strengthening the existing smoking ordinance.

Although Sacramento city and county had enacted a uniform smoking ordinance in 1984, in recent years the ALA's legislative committee grew concerned about the inadequacies of the existing ordinance in light of new information about ETS. The ALA asked the Environmental Commission, an organization responsible for advising the city and county on environmental issues, to address the issue of passive smoking, particularly in regard to smoking in the workplace.

Rob McCray, chairman of the commission, attorney, and former volunteer for the ALA, appointed a task force that included the three voluntary health agencies (ALA, AHA, and ACS), the Sacramento Restaurant Association (a bona fide organization of restaurants), the Chamber of Commerce (one representative from small business and one from large business), Arco Arena (the indoor sports arena), Pacific Gas & Electric (a major employer), and the airport.

The health advocates on the task force successfully pushed to recommend a total nonsmoking policy in the workplace. They also wanted to increase the percentage of nonsmoking seats in restaurants from a minimum of 10% (under the previous ordinance) to 50%. The Sacramento Restaurant Association eventually accepted a 50% nonsmoking requirement for all restaurants. Additionally, the task force decided to recommend a smoke-free environment for the airport, supported by the airport representative.

The task force recommendations went to the Environmental Commission, and the commission held public hearings on them. Significantly, the Chamber of Commerce, an organization representing 2600 local businesses, endorsed the recommendations of the Environmental Commission. McCray was expecting the Chamber of Commerce to protest the requirement for smoke-free workplaces. The Chamber of Commerce had invited the Tobacco Institute, the Sacramento Restaurant Association, and the ALA to a committee meeting to decide whether to support the recommendations. No strong opposition from businesses was expressed. In fact, some business representatives voiced support for the ordinance. The Tobacco Institute did not attend. With the support of the Chamber of Commerce, the Environmental Commission recommendations went to the city council and the County Board of Supervisors.

The only local group to publicly oppose the Environmental Commission recommendations was Smokers' Rights of Sacramento, a group that had been formed in October 1988. On June 12, 1990, the organization sent letters to people in the county, urging them to "write a short personal letter to your county supervisor that says smoking bans are unreasonable and current smoking restrictions are tough enough." Each letter included the name, address, and telephone number of the supervisor for their district. At the County Board of Supervisors meeting on September 11, 1990, the president of Smokers' Rights of Sacramento presented 8300 signatures of persons opposed to the ordinance. [30]

Throughout the process, the task force, the ALA, and the Environmental Commission kept in close contact with the elected officials to find out what provisions would be supported. In addition to providing suggestions based on other cities' ordinances, the task force collected data about the health effects of passive smoking. Fact sheets were compiled and newspaper articles were collected to present to the elected officials. Consequently, the decision makers were extremely aware of the scientific evidence concerning the health effects of ETS and the options being considered.

#### The Ordinance

At the hearing before the County Board of Supervisors, the tobacco industry flew in some of their "expert witnesses" who frequently testify before legislative bodies. Among those from out of town who testified in opposition to the ordinance were Gary Robertson of Fairfax, Va, who minimized tobacco smoke as a significant cause of indoor air pollution; David Weeks, a physician from Boise, Idaho; Malinda Sidak, an attorney from Covington & Burling in Washington, DC, who represented the Tobacco Institute; and John C. Fox, an attorney from San Francisco.

When it came to voting, County Supervisor Sandy Smoley, a registered nurse and volunteer for the ACS, opposed the ordinance, saying during the hearing that if the county approved such stringent measures against smoking then it should also "outlaw alcohol and fatty foods and mandate that everyone ride their bikes." Supervisor Toby Johnson agreed, "It's almost a 'Big Brother' approach to government." [30]

In contrast, Supervisor Jim Streng, former president of the ALA Board of Directors, who said he is normally one to support the rights of individuals, found the testimony by the voluntary health agencies (ALA, ACS, and AHA) and physicians to be particularly persuasive. Supervisor Grantland Johnson also cited the health evidence and the encouragement by the health coalition as the key factors in convincing him that they were dealing with a serious public health issue.

Citing the need to protect the health of workers in the workplace, Supervisor Streng first proposed to strengthen the Environmental Commission's recommendation for restaurants from a 50% nonsmoking requirement to a smoke-free restaurant policy. Originally, a smoke-free restaurant requirement was not advocated by the health coalition because they thought it would be too contentious, thus endangering the entire ordinance. Some of the city council members and county supervisors thought that if ETS was such a health hazard, the goal should be the elimination of smoking in all public places, including restaurants. Over the protest of the Sacramento Restaurant Association, a staging process was proposed for restaurants whereby during the initial months of the ordinance, the requirement would be 50%, increasing to 75%, and, finally, a 100% nonsmoking requirement for all restaurants. Staging was seen as a means of allowing customers and restaurateurs to gradually adjust to the goal of smoke-free restaurants.

On October 2, 1990, the County Board of Supervisors passed the ordinance by a vote of three to two. One week later, on October 9, the city council passed a nearly identical ordinance by a vote of eight to one. Both ordinances prohibited smoking in all workplaces, public and private; all enclosed public areas, including stores, banks, theaters, beauty shops, laundromats, and recreational facilities; public areas of hotels and motels, except during private functions; restaurants, after a phase-in period (18 months for the city, 3 years for the county); the airport; hospitals and health care facilities; and child care facilities. Bars, residences, tobacco stores, and private clubs were excluded.

The combination of encouragement and guidance from the ALA and public officials who were supportive of tobacco control formed the foundation for the passage of these comprehensive ordinances. The ALA had key players associated with it at all levels of decision making: the task force, the Environmental Commission, the County Board of Supervisors, and the city council. These individuals and groups were instrumental in the process. Council Member Lynn Robie, a nurse and former staff member of ALA, had prioritized the smoking ordinance as one of her most important goals. Commenting after the city council vote about the lack

[TABULAR DATA OMITTED]

of lobbying by the industry at the city level, Mayor Anne Rudin stated, "They probably gave up."

#### The Referendum

The tobacco industry had not given up.

On October 3, 1990, the same day that the County Board of Supervisors passed the ordinance, the Tobacco Institute loaned \$20000 to a referendum campaign committee that had not yet been formed. [31] On October 5, 1990, 3 days after the County Board of Supervisors vote and prior to the city council vote, Sacramentans for Fair Business Policy (SFBP) filed a statement of organization to force a referendum on the smoking ordinances. Pueyo, the San Francisco political consultants for RJ Reynolds, was hired to run the campaign for SFBP. That same day, RJ Reynolds contributed almost half of its total contribution of \$134000. As of December 31, 1990, SFBP had received \$375,971 in cash, loans, and services, of which only \$9150 (2%) came from non-tobacco interest (mostly restaurants) (Table 2). The tobacco industry contributions highly correlate with their domestic market shares ( $r=.94$ ;  $P=.005$ ).

While the tobacco industry has a long history of spending large sums to oppose nonsmokers' rights initiatives sponsored by tobacco control advocates, [1] the industry had only rarely attempted to overturn enacted ordinances by referendum. In 1983, the tobacco industry spent \$1.3 million in an unsuccessful attempt to overturn by referendum a workplace ordinance enacted in San Francisco. [20] In 1984, the industry also lost at an attempt to overturn a similar ordinance in Ft Collins, Colo. The referendum tactic then lay fallow for 6 years, until it reappeared in Sacramento.

The SFBP group hired Nielsen, Merksamer, Hodgson, Parrinello, and Mueller, a politically influential law firm, to fulfill legal obligations. Vigo Nielson, of the aforementioned law firm, has been a key player for the tobacco industry in California for over a decade. The firm also represents the Tobacco Institute, five tobacco companies (Philip Morris, RJ Reynolds, Lorillard, Brown and Williamson, and American Tobacco), the California Association of Tobacco and Candy Distributors Political Action Committee, and the California Medical Association. [32] This firm has been paid more than \$1 million by tobacco interests for lobbying since 1985. [33]

Within 2 weeks, SFBP was using the tobacco money to distribute referendum petitions by mail. Despite being organized and essentially fully funded by out-of-state tobacco companies, throughout the campaign, SFBP claimed to be a local independent organization. In an October 17, 1990, letter addressed to "Dear Neighbor," Pueyo wrote, "We're an independent coalition of smokers, nonsmokers, small business owners, restaurant workers, restaurant owners, and other concerned Sacramentans." A referendum petition with instructions was enclosed in the envelope.

The county required 30,433 signatures and the city required 19,334 to force a referendum vote. Most of the tobacco money went to a Sacramento company specializing in petition drives. The city clerk of Sacramento said that signature gatherers were being paid \$3 to \$5 per signature, when \$1

is usually considered a competitive rate. As in San Francisco in 1983, [20] SFBP employed nonresidents as signature gatherers from as far away as southern California. According to Mayor Rudin, California state law requires petition solicitors for a city referendum to reside in the same jurisdiction. Mayor Rudin publicly questioned the legality of the out-of-town solicitors, [34] but the district attorney did not take action.

By the deadline, the county had received approximately 60000 signatures. Enough were deemed valid to force a referendum at the county level. Supervisor Streng said that they could have had many of the county petitions invalidated because the person who signed the bottom of the forms most likely did not witness every signature, as required, particularly in restaurants where the petitions were left at the reception stand. He decided not to protest and to let the voters decide in the next county wide election, probably in 1992.

Of the 3135 signatures submitted to the city, not enough were valid to make the 19334 minimum required to force a referendum vote. As a result, the city's ordinance went into effect on December 14, 1990.

From December 14, 1990, to March 31, 1991, there were 164 complaints of noncompliance registered by the enforcement agency, the Environmental Health Division of the Environmental Management Department. When a complaint was received, a letter was sent to the offender with a copy of the ordinance. Ken Stewart, the enforcement officer, says that the ordinance is largely self-enforcing; no citations have been issued. According to Stewart, "Once people become aware of the law and realize that we are not out to arrest smokers, they comply."

Mayor Rudin has found that city residents are supportive of the ordinance. Council Member Robie agrees; about 90% of the constituent correspondence she has received has been in support of the ordinance. She also stated that many employer are happy with the ordinance because they have been in favor of a smoke-free workplace but have been unwilling to establish their own policy. Now if anyone complains, they can blame it on the city and county elected officials.

Sam Manolakas, president of the Sacramento Restaurant Association, said that their strategy in the referendum campaign will be to portray the ordinance as unfair to business. He also said that SFBP may put up its own ordinance for the public to vote on, with a 50% nonsmoking area in restaurants and reinstatement of the old workplace policy that required "reasonable accommodation" between smokers and non-smokers. Using San Francisco as an example, [20] Sacramento could be facing a multimillion-dollar campaign.

It will be difficult for the tobacco industry to argue that the law is unpopular or unworkable since the city ordinance has been working well. It is expected that a steering committee will be formed to spearhead the effort in support of the county ordinance. If the health agencies continue to exhibit the same commitment that was responsible for passage of the ordinance in the first place, then the referendum is likely to fail and county ordinance will become law.

#### METASTASIS

The tobacco industry can be expected to persist in making unsubstantiated claims about the business consequences of smoking ordinances. In January 1991, after Cole departed, The BHRA (which had become an ongoing organization) stated that the 30% figure, which was used in tobacco industry publications, exaggerated the actual loss of business during the smoke-free ordinance. The Lavenhol and Horwath study, which was commissioned by tobacco industry-sponsored RSVP, clearly refutes the claim that restaurantss suffered a 30% drop in business when the ordinance was in

effect. In fact, Cole himself stated in April 1991 that business had decreased but not by 30%. Yet the tobacco industry persists in promoting this deception. Most recently, the Winter 1991 edition of Philip Morris Magazine stated, "Business in the city's restaurants dropped 30%." [35] No documentary evidence has ever been provided to support the 30% claim.

As more cities in California and elsewhere propose smoking restrictions in public places, tobacco industry-sponsored RSVP, or similar organizations, continues to appear on the scene to fight the measure. Since successfully opposing the Los Angeles ordinance, Cole has traveled to various other communities and to the state legislature to testify on bills that would restrict smoking in restaurants. According to an RSVP press release, RSVP has expanded into "a statewide organization formed to oppose restrictive prohibition on smoking in restaurants." [36] Cole does not disclose his ties to the tobacco industry in testimony or in statement issued by RSVP; he simply claims to represent concerned restaurants. Los Angeles restaurants, Cole insists, pay for his travel expenses to communities throughout California, such as Auburn, Walnut Creek, San Luis Obispo, Bellflower, Sacramento, and Lodi.

Meanwhile, a new group has formed with connections to RSVP. The California Business and Restaurant Alliance, based in Los Angeles, has been involved during April and May 1991 in organizing opposition to proposed ordinances in Walnut Creek and Contra Costa County in northern California. The leader of the group, Fred Karger, formerly of RSVP, has been contacting businesses, restaurants, and government officials in these communities. Another individual who represents the group, Peter Gambee, organized a press conference in Walnut Creek in May. They claimed to be a grass-roots organization, yet they shared the same telephone number as RSVP. [37] Karger has declined to answer questions concerning tobacco industry funding for the group. [22]

Another person who continues to be active on behalf of the tobacco interests is Pueyo. While traveling throughout the state to organize smoker's rights groups for RJ Reynolds, he has also led the referendum drive in Sacramento and has made an interest-free loan to the TUFF organization, which is sponsoring a referendum effort against an ordinance in Lodi. He also became involved most recently in Walnut Creek. When asked if he would attend the Walnut Creek hearing, Pueyo said that he would not. "As soon as someone on the council asks if there are any representatives from the tobacco industry here, I'd have to stand up. I could see the headlines in the next day's paper, 'Big Tobacco Bucks in Walnut Creek.'" [38]

Besides the consistency observed in the individuals the tobacco industry is using the fight its battles at the local level, it is also important to note that the industry repeatedly hires a small number of prominent firms to represent it. The involvement of the Manatt, Phelps, Rothenberg, and Phillips law firm and of the Ogilvy and Mather public relations and advertising firm at both the national and local levels, as well as the involvement of attorneys associated with Vigo Nielson's firm in tobacco industry-funded initiative and referendum drives and tobacco lobbying over the past 13 years, illustrate how the industry uses the same agents to represent its interests in different jurisdictions.

#### CONCLUSIONS

As the tobacco industry continues to successfully battle tobacco control legislation at the state and national [1,2,39] levels, the local level has become increasingly important for both sides. While national and state efforts by the tobacco industry continue to concentrate on campaign contributions and lobbying, which are less effective at the local level,

the industry has developed a nationwide strategy to counter local tobacco control efforts. (The tobacco industry still works to exploit its strength in state legislatures by pushing for weak state legislation with a preemption clause that overturns or prevents passage of strong tobacco control legislation at the local level. Philip Morris also has an aggressive nationwide campaign underway to make smoking a civil right through state legislation outlawing employment decisions based on smoking status.) The industry strategy for directly opposing local legislation includes sending consultants to establish local smoker's rights groups throughout the nation; encouraging local political action among smokers through mailings and expensive publications; creating groups, in the form of business coalitions, funded by the industry and directed by individuals tied to the tobacco industry; in some cities, contributing money to election campaigns and hiring lobbyist to lobby against proposals; and keeping a low profile and denying or minimizing tobacco industry involvement in local politics.

In contrast to the efforts of the tobacco industry, which are centralized and well coordinated, the local nonsmokers' rights groups and chapters of national voluntary health agencies act independently. Consequently, the degree of encouragement, cooperation, and support for tobacco control legislation among these local groups varies greatly.

An example of a national organization that continuously provides support and advice to communities considering a tobacco control ordinance is the small public interest lobby group, Americans for Nonsmokers' Rights. This group took an active role in the communities mentioned in this article, and it assists dozens of local government bodies every year by testifying and providing model ordinances on issues ranging from restricting smoking in the workplace to eliminating cigarette vending machines. Furthermore, Americans for Nonsmokers' Rights aggressively mobilizes its members in the respective community to encourage support for proposed nonsmokers' rights laws. The fact that small, aggressive nonsmokers' rights group such as this one have been successful without the resources of the established health organizations suggests that the potential for meaningful tobacco control has hardly been tapped.

Two key ingredients are required for health advocates to overcome the tobacco industry: a strong coalition within the local community and sympathetic political leadership within the elected body. When these two ingredients combine, as in Sacramento, they form a credible foe for the tobacco industry. In smaller communities, established health groups usually play a key role, but sometimes enough support can be gathered from the community at large with a dedicated effort by nonsmokers' right activists. [19] However, in large cities, if the health community is not mobilized at an early stage of the process, even the most committed elected official, such as Los Angeles Councilman Braude, will have difficulty hurdling the obstacles erected by the tobacco manufacturers. On the other hand, when the health community is seriously committed to the cause from beginning to end, the tobacco industry will have a difficult task keeping tobacco control measures from being enacted.

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#### References

- [1] Taylor P. The Smoke Ring. New York, NY: Pantheon Books Inc; 1984:189-207.
- [2] Sylvester K. The tobacco industry will walk a mile to stop an anti-smoking law. *Governing States Localities: Congressional Quarterly*. May 1989:34-40.
- [3] Hanauer P, Barr G, Glantz SA. Legislative Approaches to a Smokefree Society. Berkley, Calif: Americans for Nonsmokers' Rights Foundation; 1986:1-7.
- [4] Glantz SA. Achieving smoke-free society. *Circulation*. 1987;76:746-752.
- [5] Pertschuk M, Shopland DR, eds. Major Local Smoking Ordinances in the United States. Washington, DC: US Dept of Health and Human Services; 1989.
- [6] The Health Consequences of Involuntary Smoking: A Report of the Surgeon General. Washington, DC: US Dept of Health and Human Services; 1986.
- [7] Environmental Protection Agency. Health Effects of Passive Smoking: Assessment of Lung Cancer in Adults and Respiratory Disorders in Children. Washington, DC: Environmental Protection Agency; 1990. Publication EPA 600/690/006A.
- [8] Glantz SA, Parmley WW. Passive smoking and heart disease: epidemiology, physiology, and biochemistry. *Circulation*. 1991;83:1-12.
- [9] Stillman FA, Becker DM, Swank RT, et al. Ending smoking at The Johns Hopkins Medical Institutions: an evaluation of smoking prevalence and indoor air pollution. *JAMA*. 1990; 264:1565-1569.
- [10] Warner KE. Effects of the antismoking campaign: an update. *Am J Public Health*. 1989; 79:144-151.
- [11] Pritchard R. Tobacco industry speaks with one voice, once again. *US Tobacco Candy J*. July 17-August 6, 1986:86.
- [12] Konrad W, Lander M. Reynolds draws a bead on the Marlboro man. *Business Week*. December 24, 1990:48.
- [13] Roper Organization. Public Attitudes Toward Cigarette Smoking and the Tobacco Industry. Prepared for the Tobacco Institute; May 1978.
- [14] V Lance Tarrance & Associates, Houston, Tex. Kern County Smoking Study. Confidential report prepared for the Tobacco Institute; September 1982.
- [15] Gallup G Jr. Cancer society gives highest ratings in test of special interest groups. *Gallup Poll*. April 16, 1989. Enclosure 4.
- [16] Stumbo B. Where there's smoke. *Los Angeles Times*. August 24, 1986:11-15, 24-28.
- [17] Freedman A. Smokers' rights campaign suffers from lack of dedicated recruits. *Wall St J*. April 11, 1988.
- [18] Joson J. Smokers fight tobacco industry's battles. *Daily Rev*. March 17, 1991:1.
- [19] Samuels BE, Glantz SA. Tobacco Control Activities and the Tobacco Industry's Response in California Communities, 1990-1991. San

Francisco: University of California Institute for Health Policy Studies; July 22, 1991. Monograph Series.

[20] Hanauer P. Proposition P: anatomy of a non-smokers' rights ordinance. N Y State J Med. 1985;85:369-374.

[21] Ifergan SJ, Milligan M. Tobacco Institute acknowledges role in fight against B. H. no-smoke law. Beverly Hills Courier. May 1987.

[22] Ferris J. Smoke screen clouds tobacco industry action. Contra Costa Times. June 23, 1991.

[23] Arnold R. Judge rejects challenge to Beverly Hills smoking ban. Los Angeles Times. April 3, 1987.

[24] Hager P. High court declines to review smoking bank in Beverly Hills. Los Angeles Times. May 21, 1987.

[25] RJ Reynolds Inc. In the news. Choice. 1987;1:4. No. 6.

[26] Jacobs C. Ban on smoking in L.A. restaurants is snuffed out, for now. Los Angeles Business J. October 22, 1991.

[27] Laventhol & Horwarth. Preliminary Analysis of the Impact of the Proposed Los Angeles Ban on Smoking in Restaurants. Los Angeles, Calif: Laventhol & Horwarth; October, 1990.

[28] Fitch A. Municipal Legislative Advocate Quarterly Expenses and Earnings Report. Los Angeles, Calif: City Hall; July-December 1990.

[29] Ferrel D. Council rejects ban on smoking in restaurants. Los Angeles Times. October 17, 1990:A1.

[30] Dempster D. Bad news for smokers in capital. Sacramento Bee. September 12, 1990:A1.

[31] Sacramentans for Fair Business Policy. General Purpose Recipient Committee Statements. Sacramento, Calif: City and County Clerks; January 1-December 31, 1990.

[32] Secretary of State. 1991-92 Directory of Lobbyists, Lobbying Firms, and Lobbyists Employers. Sacramento, Calif: Secretary of State Political Reform Division; April 1991:195.

[33] Begay ME, Glantz SA. Political Expenditures by the Tobacco Industry in California State Politics. San Francisco: University of California Institute for Health Policy Studies; 1991:55. Monograph Series.

[34] Chavez K. Rudin thinks foes of smoking ban broke state law. Sacramento Bee. December 1, 1990:B1.

[35] The lesson of Beverly Hills. Philip Morris Magazine. 1991, 6:22.

[36] Restaurants for a Sensible Voluntary Policy. SLO Restaurants Join Forces to Oppose Smoking Ordinance; Petition City Council Seeking Reasonable Compromise. Los Angeles, Calif: Restaurants for a Sensible Voluntary Policy. January 14, 1991. Press Release.

[37] King J. Where there's local smoke, there's out-of-town fire. Contra Costa Times. May 11, 1991:5A.

[38] Bloom S. Bitter fight over vast curbs on smoking in Walnut Creek. Sacramento Bee. April 19, 1991:B1.

[39] Mathews, J. No-smoking bills fade in legislature. Sacramento Bee. April 22, 1991.

[40] Philip Morris. Independent Major Donor Committee. Sacramento: California Secretary of State; January 1-December 31, 1990.

[41] RJ Reynolds. Independent Expenditure and Major Donor Committee. Sacramento: California Secretary of State; July 1-December 31, 1989.

[42] Maxwell JC. Cigarette skids continue. Advertising Age. December 4, 1989.

CAPTIONS: Los Angeles council members receipt of tobacco industry money. (table); Contributions to Sacramentans for Fair Business Policy. (table)

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Record - 36

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04906330 SUPPLIER NUMBER: 08955458 (THIS IS THE FULL TEXT)  
A comparison of smoking patterns in the People's Republic of China with the United States: an impending health catastrophe in the Middle Kingdom. Yu, Jing Jie; Mattson, Margaret E.; Boyd, Gayle M.; Mueller, Michael D.; Shopland, Donald R.; Pechacek, Terry F.; Cullen, Joseph W. JAMA, The Journal of the American Medical Association, v264, n12, p1575(5) Sept 26, 1990

## TEXT:

A Comparison of Smoking Patterns in the People's Republic of China With the United States Half of the global increase in tobacco use from 1976 to 1986 occurred in the People's Republic of China. In 1984, the first national smoking survey was conducted in China, involving over a half-million subjects. Sixty-one percent of Chinese males over age 15 smoke, with higher rates in all occupational groups than for corresponding groups in the United States. Current smoking pattern in China are similar to those in the United States during the 1950s, and these patterns forecast a steadily increasing epidemic of smoking-related deaths. It is estimated that by 2025, two million Chinese men will die annually from smoking. Foreign tobacco companies are mounting massive production and advertising campaigns in China. Government health education programs lack funds to counter these influences with sustained and comprehensive educational and interventional campaigns. To avert an impending national health catastrophe, China must launch a comprehensive smoking-control initiative aimed at public education, cessation, and legislation and policy.

IT IS WELL known that tobacco use is a major source of disease, disability, and death. As noted in Worldwatch Paper 68, "Tobacco causes more death and suffering among adults than any other toxic material in the environment." [1] The 1989 US Surgeon General's Report on the health consequences of smoking attributes the following deaths to smoking: 30% of all cancer deaths (including 87% of lung cancer deaths), 82% of chronic obstructive pulmonary disease deaths, and 20% of heart disease deaths. [2]

Smoking control efforts in the United States have produced dramatic and encouraging results since the publication of the first US Surgeon General's Report on smoking in 1964. The prevalence rate of smoking among adults fell from 40% in 1965 to 29% in 1987. Almost half of all living adults who ever smoked have quit. Mechanisms to control tobacco use continue to be strengthened through programs of information and education, legislation at the national, state, and local levels, and implementation of policies at worksites and other places that discourage tobacco use. [2]

However, while smoking prevalence rates have decreased by 1% per year in Western countries, they have increased by 2% per year in the developing world. [3] Half of the global increase in tobacco use from 1976 to 1986 occurred in China. [1]

At the sixth World Tobacco and Health Assembly, World Health Organization General Director Hiroshi Nakagima observed that China leads the world in the production and consumption of tobacco. China produces 50% of the world's tobacco and nearly one quarter of the world's cigarettes. [4,5] More than 250 million people in China smoke. [6] Unsurprisingly, morbidity and mortality rates of smoking-related diseases have followed the rising smoking prevalence rate. [7]

In 1984, a national survey on smoking behavior was conducted in China. A total of 519 600 people were surveyed: 258 422 males and 261 178 females. Subjects were randomly selected through a cluster sampling technique. All 29 of China's provinces, municipalities, and autonomous regions were sampled. The interviewer-administered questionnaire contained nine questions. [8]

The survey results and other Chinese health data collected since 1952 forecast an epidemic of smoking-related deaths; it is predicted that this epidemic will be evident by 2025. This is similar to patterns observed in the United States. Specially, the current explosion of lung cancer among men in the United States is due to the high rates of smoking among American males decades ago. [9,10]

This article compares the statistics and trends regarding smoking in China with the United States, examines the predicted increase in smoking-related disease and death rates in China, and discusses the need for vigorous smoking control programs within Chinese national health efforts.

#### SMOKING PATTERNS IN THE UNITED STATES AND CHINA: 1952-1987

China's National Survey on Smoking revealed that 61% of males over age 15 years smoke (Fig 1). This resembles the findings in the United States in 1955 when 52% of American men were classified as regular smokers. However, only 3% of Chinese males aged 15 years and older described themselves as former smokers, compared with 11% of males in the United States in 1955 (Fig 1). [11]

Among Chinese women, a scant 7% smoke. This is much lower than both the peak rate of 33% attained in 1966 and the 1987 rate of 27% among American women. [11,12]

The peak smoking prevalence rates among Chinese men occur between 25 and 64 years of age, ranging from 73% to 75%, as indicated in Table 1. Peak rates for women occur later in life, after 45 years of age. In the United States, peak rates in 1987 are found between 25 and 44 years of age for both men and women, with a high of 36% for men and 31% for women. [12]

The prevalence of smoking among Chinese males aged 15 through 19 years is 19% compared with the estimated 16% among American youth aged 12 through 17 years. [2] Surveys indicated that in Beijing suburbs 24% of males under age 18 years smoke. [8] The majority of Chinese smokers report having begun smoking regularly between the ages of 15 and 24 years, whereas in the United States, more than two thirds of all smokers initiated regular smoking by age 18 years and nearly 90% before age 20 years (National Health Interview Survey, unpublished data, 1987).

On the average, Chinese do not smoke as many cigarettes per day as American smokers (Table 2). Almost two thirds of Chinese smokers smoke 17 or less cigarettes a day. Only 35% smoke 18 or more a day, in contrast to the 69% of American smokers who smoked 15 or more cigarettes per day in 1985. [2]

As shown in Fig 2, the United States has experienced a reduction in its annual per capital cigarette consumption since the mid-1970s. Consumption in 1989 (2936 cigarettes per capital) was nearly 33% lower than the peak year of 1963 (4345 cigarettes per capital). The 1989 figure represents the first time in more than 50 years that per capital consumption dropped below 3000 cigarettes per person in the United States. [2,13] In China, however, per capita cigarette consumption had increased annually since the early 1950s and during the past decade alone has nearly doubled, increasing from less than 1000 cigarettes per person in 1978 to

1748 cigarettes in 1987, the last year for which reliable figures are available (J. R. Bumgarner, PhD, unpublished data, 1988) (Fig 2).

The lower per capita cigarette consumption in China may be attributable in part to the cost and nicotine content of Chinese cigarettes. The average cost of a pack of cigarettes in China is \$0.22; smoking one pack per day costs about 10% to 14% of the average monthly salary of a farmer or factory worker. [14] The nicotine content of Chinese cigarettes ranges from 0.7 mg to 1.2 mg per cigarettes vs an average of 1.0 mg per filtered cigarette in the United States. [15] However, foreign tobacco corporations are helping the Chinese tobacco industry boost the nicotine content of Chinese tobacco. [16]

Table 3 compares the smoking prevalence rates among males for selected occupational groups in the United States and China. The rates are higher for Chinese males in all occupational groups than for the corresponding US groups. In the United States, the prevalence of smoking among some highly educated groups had dropped substantially in recent years. For instance, smoking among physicians declined from 52% in 1951 to 16.7% in 1985. [17,18] Likewise, rates have also dropped among US farmers and farm workers to between 40% and 50% in 1955, as well as among professional workers who smoked at a rate of 43% in 1955. [19] In China, the smoking rate among the more educated groups is almost the same as among farm and factory workers, with more than one half of Chinese physicians currently smoking.

Cigarettes are the predominant tobacco product used in China and are used by 34% of the population over age 15 years who smoke. Among smokers, 73% smoke manufactured cigarettes, 2% smoke cigar, 6% smoke pipes or hand-rolled cigarettes, and 19% smoke a combination of manufactured and hand-rolled cigarettes. Most Chinese cigarettes are unfiltered and tar contents range from 21 mg to 33 mg per cigarette. [15,20] Only 3% of smokers smoke filtered cigarettes. [8]

In the United States, 81% of tobacco users smoke only cigarettes and an additional 7% use some other form of tobacco in addition to cigarettes. [12] Ninety-four percent of American cigarettes are filtered, and the average tar content is 14 mg. [15,20]

#### TOBACCO USE PATTERNS AND HEALTH OUTCOME PROJECTIONS FOR CHINA

As noted, the current level of smoking in China forecasts a steadily increasing epidemic of smoking-related deaths through 2025. The onset of the epidemic has already been detected. In 1957, the mortality rates in urban areas for malignant tumors and cardiovascular and cerebrovascular diseases were 36.9, 47.2, and 39.0 per 100 000, respectively. By 1984, the rates had risen to 116.18, 124.64, and 116.27 per 100 000. [21] the age-adjusted mortality rate for lung cancer in males in Shanghai rose from 28.5 per 100 000 between 1963 and 1965 to 52 per 100 000 between 1976 and 1979. [22] This is the beginning of an expected avalanche of smoking-related deaths.

Based on current smoking level and risk estimates developed for cigarette consumption level similar to those in China, Peto [23] has predicted that lung cancer deaths among Chinese males will increase from 30 000 in 1975 to 900 000 in 2025. By 2025, an estimated 2 million Chinese men will die annually from tobacco-related health problems. [24]

These predictions are consistent with patterns observed in the United States since 1900. That is, the increase in smoking prevalence between 1900 and 1960 was followed by an increase in morbidity and mortality rates due to smoking-related diseases, lung cancer being the most dramatic example.

Similar relationships between smoking prevalence and subsequent lung cancer rates have been recorded in Great Britain. [25]

Few men and women died of lung cancer in the United States in the early 1900s. Currently, lung cancer claims over 100 000 lives each year. Between 1958 and 1962 and 1978 and 1982, the age-adjusted lung cancer mortality rate per 100 000 rose from 38.1 to 71.0 among males, and from 5.8 to 20.6 among females. Cancers of the lung and bronchus are the most common cause of cancer death. [9,26] Studies indicate that respiratory system cancer deaths are almost exclusively due to cigarette smoking, with an estimated 90% of all lung cancer attributable to smoking. [2,25,27]

Given current smoking prevalence rates and cigarette tar content levels, the age-adjusted lung cancer mortality rates in the United States were predicted to peak at 71.7 for males in 1995 and to drop to 43.0 by 2025; for females, the rate is predicted to peak at 43.2 in 2010 and to drop to 38.8 by 2025. However, mortality rates among males have already exceeded the predicted peak; the mortality rate for white males was 73.2 in 1987. The falling mortality rates are a result of the decreased smoking prevalence rates observed in recent years. [9,28]

However, smoking prevalence rates in China are likely to increase and remain high for years to come unless vigorous smoking-control programs are implemented because foreign tobacco corporations have become active in the Chinese tobacco industry.

#### FOREIGN TOBACCO CORPORATIONS IN CHINA

China, with a population of 1.1 billion people, is the largest market in the world. In recent years, several foreign tobacco corporations have passed through China's "open door." The foreign tobacco corporations are helping China to (1) raise the nicotine content of Chinese tobacco (J. R. Bumgarner, PhD, unpublished data, 1988), (2) increase tobacco and cigarette production (J. R. Bumgarner, PhD, unpublished data, 1988), [29] (3) create new jointly owned cigarette companies and cigarette brands, [30,31] and (4) manufacture Western cigarette brands. [30] With modern equipment, China can increase cigarette production eightfold. [32]

The China-American Cigarette Co, Ltd, a joint-venture by RJR Nabisco and Xiamen Cigarette Factory, began production in October 1988. Production capacity is 2.5 billion cigarettes per year, enough to provide 300 000 smokers with a pack per day. Smoking control experts at the Centers for Disease Control estimate that the consumption of these cigarettes alone will eventually lead to 75 000 Chinese deaths per year. [30,33]

The foreign tobacco companies are also exporting Western advertisement and promotional strategies to China; billboards and television commercials advertising American cigarettes are becoming more common in China. The "Marlboro Man," a prominent figure in the emerging ad campaigns, has placed his brand on the Chinese market. These companies also sponsor sports and cultural events.

Western cigarette brands and the new Sino-American brands, coupled with promotional efforts, are likely to increase smoking prevalence among youth and women. Chinese brands, such as "Cowboy" and "Slim Kings," and the foreign brands appeal to the desires of young people to feel contemporary and worldly. [4,34,19] In time, the American tobacco corporations will no doubt initiate aggressive marketing campaigns aimed at youth and women in China, similar to those they are now conducting in Taiwan and Japan. [35,36]

#### SMOKING CONTROL IN CHINA: CURRENT EFFORTS AND FUTURE NEEDS

The Office of the National Patriotic Health Campaign Committee, Division of Health Education, has been responsible for smoking control for several years. Smoking control efforts have included issuing government circulars about the health hazards of smoking, coordinating research, producing and distributing health education materials, coordinating the National Stop Smoking Day, and influencing national law and policy.

Unfortunately, as in many developing countries, there is little money to support sustained, comprehensive health education and health promotion programs. The Office of the National Patriotic Health Campaign Committee, Division of Health Education, lacks the funds needed to conduct large-scale smoking interventions and sophisticated long-term smoking-control research projects. To help remedy this situation, collaborative research and intervention projects are being set up with other nations, and funds are being sought from international health agencies.

However, time is limited. China must launch a comprehensive smoking-control initiative as soon as possible to avert an impending national health catastrophe. The initiative should focus on (1) public information and education, (2) smoking cessation, (3) legislation and policy, and (4) research. [37,38]

Research is needed to identify and study the determinants of smoking behavior in Chinese society and to evaluate smoking-control programs. Theories, principles, and strategies from other countries regarding smoking behavior and behavior change may not apply to China, or only apply in part. Through research, Chinese scientists can develop a body of theory, principles, and strategies to guide smoking intervention programs.

Because smoking is widespread, smoking-control programs must be implemented in all sectors of society. However, special attention should be given to youth and young adults, as younger people are the target of many cigarette promotion efforts. Health education regarding smoking must be made a part of all school health curricula. Media campaigns are needed to counteract cigarette promotion efforts. Worksite smoking interventions could reach the majority of adult Chinese smokers.

Other interventions should target the major behavior models of society, such as physicians and teachers, who are in positions to discourage tobacco use both through direct intervention and by the examples they set. Reducing the current high rate of smoking among physicians in China (Table 3) should be a priority. Further, a cadre of health professionals and health workers from all provinces, municipalities, and autonomous regions needs to be trained in smoking control. They should integrate smoking-cessation treatment from both traditional and Western medicine.

Tobacco production has economic appeal for many developing countries, but a closer examination of the economic equation reveals costs that are not always readily apparent, including environmental pollution, deforestation, costs associated with subsidy programs, diversion of resources, and most importantly, the costs associated with tobacco-related morbidity and mortality. In addition to its grave consequences for public health, tobacco production and promotion is not as economically profitable as portrayed by industry apologists. [39]

As in all countries that wish to reduce and prevent the serious threat to public health posed by tobacco, public education campaigns must be augmented by policies and legislation that reinforce the antitobacco message. The passage and implementation of such policies and legislation is frequently not easily achieved, and it is important that the public health communities of all nations cooperate with one another in trying to achieve their goals for the reduction or elimination of tobacco use. In China,

legislation and policies are needed to control smoking and to contain the Chinese tobacco industry and foreign tobacco corporations. Health warnings are also needed on all cigarette packs, along with information on tar and nicotine content. All forms of cigarette advertisement, including those of foreign tobacco companies, should be banned and sales to minors prohibited. Smoking in public buildings should be limited to designated areas and banned in hospitals and on all forms of public transportation.

Further, the Chinese government should increase the taxes on cigarettes and other tobacco products. The additional income could be used to support smoking-control programs and care for people with smoking-related health problems. At the same time, Chinese tobacco companies should reduce the tar and nicotine content of their cigarettes and stop production of medicinal cigarettes and herbal products purported to have beneficial effects on health.

#### COMMENT

China has experienced a rapid increase in the prevalence of smoking in recent years. In addition, foreign tobacco corporations have become active in the Chinese tobacco industry. The increases in smoking prevalence will result in an epidemic of smoking-related disease and death in coming decades. These predictions are based on patterns observed in the United States and in other countries. At present, smoking-control efforts in China are limited. China must engage in a comprehensive smoking-control initiative if the impending national health catastrophe is to be contained. This smoking-control initiative must include research, interventions, legislation and policy, and health manpower development.

#### References

- [1.] Chandler WC. Banishing tobacco. *Worldwatch* Paper 68. 1986.
- [2.] Reducing the Health Consequences of Smoking: 25 Years of Progress, a Report of the Surgeon General. Washington, DC: Public Health Service, Centers for Disease Control, Office on Smoking and Health; 1989. US Dept of Health and Human Services publication CDC 89-8411.
- [3.] Masironi R, Rothwell K. World trends in smoking. Presented at the Sixth World Conference on Smoking and Health, November 10, 1987; Tokyo, Japan.
- [4.] Spotlight on China: demand outstrips supply. *Tobacco Reporter*. 1989;22-24.
- [5.] Bickers C. Regaining US leaf's world share: long, slow, but possible process. *Tobacco Int*. 1987;189:5-8.
- [6.] Shelton A. 1,398 billion still enough. *Tobacco Reporter*. 1988;24-25.
- [7.] Ministry of Public Health. Chinese Health Almanac [in Chinese]. Beijing, People's Republic of China: The People's Health Publisher; 1952-1987.
- [8.] Ministry of Public Health. Compilation of Data From the 1984 National Smoking Sampling Survey [in Chinese]. Beijing, People's Republic of China: The People's Health Publisher, 1988.
- [9.] Kessler LG. Projections of lung cancer mortality in the United States: 1985-2025. *J Natl Cancer Inst*. 1988;80:43-51.
- [10.] Harris JE. Smoking among successive birth cohorts of men and women in the United States during 1920-1980. *J Natl Cancer Inst*. 1983;71-473-479.
- [11.] Smoking and Health, a Report of the Surgeon General. Washington, DC: US Government Printing Office; 1979. US Dept of Health, Education, and Welfare publication PHS 79-50066.
- [12.] Schoenborn CA, Boyd GM. Smoking and other tobacco use: United States, 1987. *Vital Health Stat* 10. 1989;169:1-79.

- [13.] Economic Research Service. Tobacco Situation and Outlook Report. Washington, DC: US Dept of Agriculture; 1989.
- [14.] Yu JJ. Country information on tobacco. Presented at the Regional Working Group on Tobacco or Health. World Health Organization Western Pacific Regional Office; November 5, 1987; Tokyo, Japan.
- [15.] China, the Health Sector: A World Bank Country Report. Washington, DC: The International Bank for Reconstruction and Development/The World Bank; 1984.
- [16.] Zhao Y-K. Research in China: cooperation brings success. Tobacco Reporter. 1989;24.
- [17.] Harvey L, Shubat S. Public opinion on health issues. In: AMA Surveys of Physician and Public Opinion on Health Care Issues. Chicago, Ill: American Medical Association; 1987.
- [18.] Glynn TN. Relative effectiveness of physician-initiated smoking cessation programs. Cancer Bull. 1988;40:359-364.
- [19.] Haenzel W, Shimkin M, Miller HP. Tobacco smoking patterns in the United States. Public Health Monograph. 1956;71:1-111.
- [20.] Ahmad SM. China curtailing overall leaf production and concentrating on quality. Tobacco J Int. 1988; 23-24.
- [21.] Weng XZ. Smoking, a serious health problem in China. Presented at the Sixth World Conference on Smoking and Health; November 11, 1987; Tokyo, Japan.
- [22.] Hirayama T. Epidemiological aspects of lung cancer in the Orient. In: Ishikawa S, Hayata Y, Suemasu K, eds. Lung Cancer 1982 Excerpta Medica International Congress Series 569. Amsterdam, Netherlands: Elsevier Science Publishers; 1982.
- [23.] Peto R. Tobacco: UK and China. Lancet. 1986;2:1038.
- [24.] Peto R. Tobacco-related deaths in China. Lancet. 1987;2:211.
- [25.] Doll R, Peto R. The causes of cancer: quantitative estimates of avoidable risks of cancer in the United States today. J Natl Cancer Inst. 1981;1191-1308.
- [26.] Cancer Facts and Figures--1989. Atlanta, GA: American Cancer Society; 1989.
- [27.] Nath UR. Smoking in the third world. World Health. June 1986;6-7.
- [28.] Smoking, Tobacco, and Cancer Program Status Report From 1985-1990. Bethesda, Md: National Cancer Institute. In press.
- [29.] Cheng L. Chinese form many foreign pacts to improve quality of cigarettes. Tobacco Int. 1986;188:12-14.
- [30.] China's joint-venture cigarette factory nearing completion. World Tobacco. 1988:46.
- [31.] Xiamen's joint venture (Chinese-RJR) in operation: 2.5 billion cigarette production expected. Tobacco Int. November 11, 1988:5.
- [32.] CNTC, world's largest cigarette maker, seeks worldwide advice. Tobacco Int. 1985;187:7-10.
- [33.] Koplan JP. An assembly line of death. The Atlanta Journal and Constitution. November 14, 1988.
- [34.] Tomson D. Smoking and health in China. Lancet. 1987;2:394.
- [35.] Chen TL. Comments before the Interagency Committee on Smoking and Health. Presented at the Media Conference Protesting US Tobacco Trade Policy; July 19, 1989; Washington, DC.
- [36.] Connolly GN. Comments before the Interagency Committee on Smoking and Health. Presented at the Media Conference Protesting US Tobacco Trade Policy; July 19, 1989; Washington, DC.
- [37.] Kunze M, Wood M, eds. Guidelines on Smoking Cessation: UICC Technical Report Series. Geneva, Switzerland: International Union Against

Cancer; 1984:79.

[38.] Gray N, Daube M, eds. Guidelines for Smoking Control: UICC Technical Report Series. 2nd ed. Geneva, Switzerland: International Union Against Cancer; 1980-52.

[39.] Lewit, EM. The economic benefits of tobacco in developing countries; telling it like it is. Presented at the Seventh World Conference on Tobacco and Health; April 5, 1990; Perth, Australia.

[40.] The Health Consequences of Smoking: Cancer and Chronic Lung Disease in the Workplace, a Report of the Surgeon General. Rockville, Md: US Dept of Health and Human Services; 1985. Publication (PHS) 85-50207.

CAPTIONS: Smoking prevalence by age among Chinese Males and Females.

(table); Smoking prevalence among Chinese and American males over 14.

(graph); Annual per capita cigarette consumption in China and the US.

(table); Smoking prevalence among Chinese and American males by occupation.

(table)

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Ending smoking at the Johns Hopkins medical institutions: an evaluation of smoking prevalence and indoor air pollution.

Stillman, Frances A.; Becker, Diane M.; Swank, Robert T.; Hantula, Donald; Moses, Hamilton; Glantz, Stanton; Waranch, H. Richard

JAMA, The Journal of the American Medical Association, v264, n12, p1565(5)

Sept 26, 1990

#### TEXT:

Ending Smoking at The Johns Hopkins Medical Institutions An empiric evaluation of a policy ending smoking in a large urban medical center was conducted. The study included a prospective cohort tracking of employees to measure changes in smoking behavior, environmental fires, smoking-related litter, and environmental tobacco pollution exposure. A 25% decrease in employee smoking prevalence was found (21.7% vs 16.2% before vs after policy implementation, respectively). The daily number of cigarettes reportedly smoked by employees who continued smoking and the total number smoked at work decreased across all occupational categories by an average of 25%. Significant reductions were noted in the level of public smoking and the amount of cigarette remnants. Nicotine vapor concentrations decreased significantly in all areas except restrooms. These findings suggest that visible smoking and environmental tobacco smoke exposure can be markedly decreased by instituting a policy eliminating smoking in a large medical center. AS DATA emerge that show the effects of passive smoking on long- and short-term morbidity, highly visible smoking in health care settings has become logically inconsistent with the health goals of medical institutions. [1-5] Thirty-four states (66.7%) have legislated smoking restriction within hospital facilities. [6] A survey in 1988 of 774 university-affiliated medical institutions reported that although 90% had implemented some type of restriction on smoking, only 8% eliminated smoking entirely from their premises. [7]

Despite a trend toward smoking reduction in public places, there are few data on compliance with restrictions on smoking or the effect of such restrictions on indoor air quality or smoking behavior. [8-11] Previously,



we reported the results of the first phase of The Johns Hopkins Medical Institutions (Baltimore, Md) no-smoking policy, conducted only in the Children's Center. [12]

This study reports the effects of a policy to eliminate smoking at The Johns Hopkins Hospital on smoking behavior and environmental tobacco smoke exposure. A prospective cohort method was used. The smoking behavior of hospital employees was examined before and after the policy implementation, allowing examination of quitting rates after the policy and determinants of change in smoking status and consumption patterns.

#### MATERIALS AND METHODS

##### Background

In 1987, the Board of Trustees of The Johns Hopkins Hospital voted to eliminate smoking as of July 1, 1988, in all areas of the hospital complex, involving 24 buildings in a 12-square-block area. The previous policy allowed smoking in the designated areas of all cafeterias, waiting areas, lounges, most patient areas, work areas, and offices, except in The Children's Center. Smoking also persisted among visitors, patients, and staff in nondesignated areas throughout the institution. A steering committee composed of representatives of all major departments was formed to implement the smoke-free environment. The policy was officially announced on January 1, 1988, and was followed by an extensive internal media and educational campaign. To prepare for the policy change, a large-scale and comprehensive health-oriented campaign that emphasized the effects of passive smoking was organized. Free screening for cholesterol, blood pressure, and exhaled carbon monoxide, computerized health risk appraisal, and on-site cardiovascular risk assessment counseling were offered to all employees beginning 6 months before implementation and continuing to the present. Educational programs targeted at all hospital managers, supervisors, and security personnel were provided to ensure proper enforcement of the policy. Multi-component 8-week smoking cessation groups, 1-hour quitting clinics, individualized counseling, and self-help manuals were offered free to all employees.

##### Survey

Full- and part-time permanent employees of the hospital and school of medicine ( $N = 8742$ ) with primary work space within the hospital complex were identified. An initial survey was distributed in November 1987, 2 months before the announcement of the impending change in the smoking policy. Surveys, with unique identification numbers and assurances of confidentiality, were distributed with employee paychecks and returned by interdepartmental mail. One year after the initial survey and 6 months after policy implementation, respondents from the initial survey who returned a questionnaire meeting the study criteria were to be included in the follow-up survey ( $N = 5190$ ). The criterion for inclusion was a questionnaire with a valid identification number and completed responses to smoking status questions. However, only individuals who completed the initial survey and who were still included on the payroll records at the time of the second survey were then mailed a follow-up questionnaire ( $N = 4480$ ). The survey used standardized questions on current smoking patterns, the frequency and places where smoking occurred, characteristics of the individual's work environment, sociodemographic variables, and attitudes toward quitting and the smoking policy. The self-administered instrument took approximately 15 minutes to complete. A similar questionnaire was administered at the 1-year follow-up.

##### Atmospheric Nicotine

##### Vapor Monitoring

To document changes in environmental tobacco smoke (ETS), vapor-phase

nicotine was selected as a proxy measure. Nicotine is released by cigarette smoking in amounts sufficient to be detected in the environment even at very low levels. [13] Nicotine monitors were placed for 7-day periods in randomly sampled hospital environments, including restrooms, elevator lobbies, offices, conference rooms, staff lounges, and patient areas, 8 months and 1 month before the policy was initiated. A follow-up of the same sites was undertaken 8 months after policy implementation. The nicotine monitor consisted of a 37-mm-diameter polystyrene cassette containing a Teflon-coated glass fiber filter treated with a 4% sodium bisulfate solution. These passive filters allow airborne nicotine vapor to diffuse to the treated filter, where it remains until analyzed by gas chromatography. [14,15] Passive-diffusion nicotine monitoring can effectively identify passive environmental tobacco smoke in a range of indoor settings. [16,17] The air flow in all buildings in the hospital is maintained at a consistent temperature and humidity range. No major deviations in functioning of the systems were known to occur during nicotine vapor monitoring.

#### Counts of Cigarette Remnants and Hospital Fires

Ashtrays located at randomly selected sites throughout the hospital were unobtrusively tagged for counts. In elevator lobbies, waiting lounges, and hospital entrances at the parking garages, the number of cigarette butts were counted in the early morning and late afternoon. counts were performed monthly beginning 6 months before and 1,3, and 6 months after policy initiation. Ashtrays remained in place after the policy was implemented, as they were wall mounted. The number of fire incidents in the hospital associated with negligent smoking were collated by the hospital fire officer. Negligent smoking fires included those for which a formal hospital incident report was filed and a fire alarm was activated. The hospital has a standardized fire incident reporting system that had been in place for 4 years before the policy implementation and that remained unchanged in the year after the smoke-free policy initiation.

#### Observations of Employee and Visitor Smoking

Observations of employee and visitor smoking activity were made in four selected lounge areas and in two of the three hospital cafeterias. Observations were made for 30-minute periods in the cafeterias (42 observations X 30 minutes = 1260 minutes) and for 10-minute intervals in each of the four lounge areas (36 observations X 40 = 1440 minutes). Cafeterias and lounges were observed during the lunch period from noon to 2 PM, when usage was the highest and visitation hours began. Observations were made on all weekdays and were performed monthly beginning 8 months before the policy initiation and at 1 and 6 months afterward. Observers wore normal street clothing to avoid attention and used a magazine or book to conceal the data collection forms. The number of individuals in a location and the number observed smoking was recorded, with visitor or employee status noted. Observations were not carried out in patient areas, since patients were isolated in rooms of one to two people. Interobserver reliability (agreements/ [agreements + disagreements] X 100) between two trained observers was estimated to be 99% for a 5% sample of the observations.

#### Statistical Analysis

Continuous variables were compared from baseline to follow-up with Student's paired t test for variables demonstrated to be normally distributed by the Wilk-Shapiro test for normality. Categorical variables were compared by means of cross-tabulation tables and the [X.sup.2] statistic. The prevalence of current smoking was compared from baseline to

1-year follow-up with the test of differences for two proportions with independent samples. [18] Multiple logistic regression analysis was used to examine predictors of quitting in the cohort of smokers tracked over the course of the study.

## RESULTS

### Employee Smoking Behavior:

#### Self-Report

The response rate for the initial survey was 69.2% (6050/8742). Of those questionnaires returned, 86% (N = 5190) were usable based on study criteria. Follow-up questionnaires were mailed to 4480 employees who completed the initial survey; the remaining 14% were not mailed follow-up questionnaires since they were no longer employees of the institution. The response rate to the follow-up survey was 76.4% (3423/4480). Of the follow-up questionnaires returned, 84% (N = 2877) were usable based on study criteria and were included in the cohort analysis. Respondents for both the baseline and follow-up surveys were found to reflect the same sociodemographic and occupational distributions (72.6% were female and 68.9% had greater than a high school education at baseline; 72.9% were female and 72.7% had greater than a high school education to follow-up). Smokers were less likely to return the follow-up survey.

During the year between surveys, the reported cross-sectional smoking prevalence declined by 25%, from 21.7% to 16.2% ( $P = .0001$ ). Of those who continued to smoke, the average number of cigarettes reported smoked per day declined by 20%, from 16.4% to 13.1. The number smoked during working hours declined from 7.8 to 3.8 (Table 1).

The Figure displays smoking prevalence by job category. Service workers had the highest self-reported smoking prevalence both before and after the policy initiation (34.6% at baseline and 27.3% at follow-up), whereas physicians had the lowest self-reported smoking prevalence (5.5% at baseline and 2.7% at follow-up).

Table 1 summarizes the total number of cigarettes smoked per day and at work by job category. The number of cigarettes smoked per day decreased in all employee groups after the policy was implemented. Before the policy, supervisors reported smoking the largest total number of cigarettes per day and the largest number of cigarettes smoked at work. Reductions in the self-reported number of cigarettes smoked each day and at work were observed in all employee groups. After the initiation of the policy, nurses reported smoking the fewest cigarettes during working hours.

#### Observations of Smoking

Table 2 summarizes the average daily observations of active public smoking by staff and visitors at baseline and at follow-up. The percentage of people actively smoking declined dramatically, indicating widespread compliance with the smoke-free environment. Only one visitor was observed smoking after the policy implementation, and he indicated that he was unaware of the smoking policy. A decrement in the number of staff and visitors using the cafeteria was reflected in a reduction in overall cash receipts as well as a reduction in the total number of people present in these areas during the 6 months after the smoke-free policy. The effect, however, was short-lived, and the numbers of individuals using the cafeteria had returned to baseline levels 1 year after the smoke-free policy was initiated. The number of staff and visitors using the waiting areas remained constant at follow-up.

#### Cigarette Remnant Counts and Hospitals Fires

Table 3 summarizes the average daily cigarette butt counts from ashtrays at elevator lobbies, lounges, and entrances. a reduction of 80.7%

in the total counts was observed in the lobby areas, whereas a reduction of 96.8% was observed in the waiting areas during the 6 months after the smoke-free policy. An increase of 7.7% was recorded in the number of cigarettes extinguished at hospital entrances. The number of fire incidents had averaged 20 per year for the 4 years preceding the policy initiation (range, 12 to 29). the majority of these fires involved no property damage or injury. There were no such fire incidents due to negligent smoking from July 1, 1988, through July 1, 1989, the first year of the hospital no-smoking policy.

#### Atmospheric Nicotine

#### Vapor Monitoring

Table 4 summarizes the changes in the concentrations of vapor-phase nicotine used as a proxy for ETS. The level of ETS fell by one to two orders of magnitude in offices, elevators lobbies, corridors, visitors and staff lounges, and cafeterias. the ETS decreased by nearly 80% in restrooms, but the differences were not statistically significant.

#### Smoking Cohort Quitting Rates

The first survey yielded a total of 1124 self-professed smokers. Of these, 899 remained actively employed 1 year later, and 446 of these returned the second survey, yielding a follow-up response rate among remaining prepolicy smokers of 50%. The self-reported sustained quitting rate in the respondents in the year between surveys was 20.4% (91/446). However, if the worst-case scenario is assumed, ie, that all of the remaining employed nonrespondents to the original survey continued smoking, the quitting rate would be 10.1% (91/899). The exclusion of prepolicy smokers with self-reported nonsmoking status of less than 3 months modestly altered these quitting rates (81/446 [18.2%]; 81/899 [9.0%]).

Bivariate analyses demonstrated that people who smoked at baseline and reported not smoking at follow-up for greater than 3 months (n=81) had smoked for fewer years, smoked fewer cigarettes per day, smoked less at work, and had higher educational levels than smokers at baseline who continued to smoke after the policy or who were recent quitters (Table 5). Smokers in the youngest age decade (20 to 29 years) and the oldest age decade ([is greater than or =]50 years) were more likely to stop smoking than were 30- to 49-years-old respondents who smoked at baseline. Those with no patient care responsibilities were also more likely to quit. Gender, part-time vs full-time work status, and type of work area (private office vs group office) were not associated with quitting. When all variables were entered into a multiple logistic regression analysis, only the number of cigarettes smoked per day at baseline ( $P$ [is less than].0001,  $R=-.194$ ) and educational level ( $P=.006$ ,  $R=-.115$ ) remained independent predictors of quitting for periods longer than 3 months (multiple  $R=.25$ ,  $P$ [is less than].0001).

#### COMMENT

This evaluation suggested that the implementation of a smoke-free environment at The Johns Hopkins Hospital was effective in reducing exposure to ETS and in reducing the overall prevalence of smoking among employees. The effect was even more dramatic than what had been observed in the earlier study in The Children's Center. Exposure to environment tobacco smoke was markedly reduced in almost all of the monitored areas of the hospital. Many measurements of eTS were found to be below the limit of detection, suggesting that little or no smoking occurred after the policy implementation.

Smoking by employees and visitors in such visible areas as cafeterias, lounges, and elevator lobbies was virtually eliminated. Restrooms were the only location where smoking levels seemed to be high at

baseline and remained so. It seems that restrooms are areas that have long been used by smokers, and the smoke-free policy did not eliminate the covert use of restrooms as smoking areas. From a safety perspective, however, this might be preferable to covert smoking in areas where cigarettes could be extinguished in waste-baskets, creating a greater fire risk than those extinguished in sinks or commodes (provided this is where restroom cigarette butts are extinguished).

Among employees, prevalence of smoking was significantly decreased and changes were reported in smoking consumption for all of the occupational categories. Although self-report may be subject to social-desirability bias, [19] it was too invasive to use biochemical validation in a large pool of employees. However, concurrent measures of active smoking in the environment demonstrated a marked reduction, indicating that it is probable that most who reported quitting were at least not smoking at work. Clerical and supervisory personnel reported the largest decrements in the number of cigarettes smoked at work. However, employees in patient care positions did not report as dramatic changes in their smoking behavior, except for nurses, who reported significant decrements in the number of cigarettes smoked at work. It may be hypothesized that clerical workers, supervisors, and nurses have more rigidly controlled work schedules that may not afford them as many opportunities to leave their work stations to smoke except at designated break times.

Although several other studies have found little changes in smoking prevalence after a smoke-free policy, in those studies, employees may not have been followed up long enough or baseline observations may have been taken too close to the time policy was implemented. In addition, such studies have not generally tracked a cohort of smokers to determine reported quitting rates. Our results support those reported by Andrews[1] that 26% of previous smokers had quit and 33% of current smokers had reduced their cigarette consumption after implementation of smoking restrictions at New England Deaconess Hospital, Boston. In addition, Borland et al[20] surveyed workers in the Australian Public Service 2 to 4 weeks before and 5 to 6 months after creation of smoke-free places. They found a drop of 25% in daily cigarette consumption among people who continued to smoke but no change in smoking prevalence. The change in consumption among smokers was comparable with the change we observed. The differences in smoking prevalence may be due to the fact that the initial survey by Borland et al[20] occurred shortly before the policy change went into effect, whereas our initial survey occurred well before the policy was even announced. It may be that smokers who are going to quit (at least in the short term) do so in anticipation of the policy change. In addition, our implementation efforts included an extensive internal media campaign, smoking cessation, and health promotion activities, which may account for some of the changes in smoking behavior noted.

This evaluation of a smoke-free policy in a large, urban, academic medical institution documented a positive change in the environment among employees and a reduction in reported smoking prevalence and consumption 6 months after implementation. Fires decreased markedly. The effects on both levels of ETS exposure and primary smoking were large and point to positive influences that the creation of a smoke-free environment can have as this trend continues. The levels of ETS after the policy implementation fell by one to two magnitudes of exposure to amounts that were barely detectable by gas chromatography. This information, together with the exposure measured by Repace and Lowrey, [22,24] suggests that total exposure for hospital employees to ETS (allowing for exposure at home and outside the worksite)

would be reduced by about 75%.

These findings suggest that institutions that have failed to adopt smoke-free environments, citing the probability of failure or of intense resistance, can achieve success in markedly reducing visible and active smoking with an organized, strongly sanctioned implementation program that includes health promotion activities for all employees, supportive activities for smokers, and education for nonsmokers. Exposure to smoke was reduced significantly, which can ultimately be accompanied by a decrement in smoke exposure morbidity in hospital employees. [22,23] The mission of health care institutions is to reduce the burden of disease. Creating smoke-free environments in such institutions is a logical extension of the medical center's responsibility to promote health.

#### References

- [1.] Andrews JL. Reducing smoking in the hospital: an effective model program. *Chest*. 1983;84:206-209.
- [2.] Hurt RD, Berge KG, Offord KP, et al. the making of a smoke-free medical center. *JAMA*. 1989;261:95-97.
- [3.] Kottke TE, Hill C, Heltzig C, et al. SMOke-free hospitals: attitudes of patients, employees and faculty. *Minn Med*. 1985;68:53-55.
- [4.] Welty TK, Tanaka ES, Leonard B, et al. Indian health service facilities become smoke-free. *JAMA*. 1987;258:185.
- [5.] Reducing the Health Consequences of Smoking: 25 Years of Progress: A Report of the Surgeon General. Atlanta, Ga: Centers of Disease Control, Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1989. US Dept of Health and Human Services publication (CDC) 89-8411.
- [6.] Fielding JE, Phenow KJ. Health effects of involuntary smoking. *N Engl J Med*. 1988;319:1452-146-.
- [7.] American College of Health Care Executives. Smoking policy survey return results. Presented at the Congress on Administration; February 15, 1988; Chicago, Ill.
- [8.] Biener L, Abrams DB, Follick MJ, Dean L. A comparative evaluation of a restrictive smoking policy in general hospital. *Am J Public Health*. 1989;79:192-195.
- [9.] Dawley HH, Baldwin J. The control of smoking: smoking rate in designated smoking and no smoking areas. *Int J Addict*. 1983;18:1033-1038.
- [10.] Rosenstock IM, Stergachis A, Heaney C. Evaluation of smoking prohibition policy in a health maintenance organization. *Am J Public Health*. 1986;76:1014-1015.
- [11.] Rigotti NA, Piki HB, Cleary P, et al. The impact of banning smoking on a hospital ward: acceptance, compliance air quality, and smoking behavior. *Clin Res*. 1986;34:833.
- [12.] Becker DM, Conner HF, Waranch HR, et al. The impact of a total ban on smoking in the Johns Hopkins Children's Center. *JAMA*. 1989;262:799-802.
- [13.] Grubner O, First MW. Gas chromatographic determination of nicotine in gases, and lipids with suppression of absorption effects. *Anal Chem*. 1980;52:1755-1758.
- [14.] Hammond SK, Leaderer BP, Roche AC, Schenker M. Collection and analysis of nicotine as a marker for environmental tobacco smoke. *Atm Environ*. 1987;21:457-462.
- [15.] Hammond SK, Leaderer BP. A diffusion monitor to measure exposure to passive smoking. *Environ Sci Tech*. 1987;21:494-497.
- [11.] Sterling TD, Collect CW, Sterling EM, et al. Environmental tobacco smoke and indoor air quality in modern office work environments. *J Occup Med*. 1987;29:57-62.

- [17.] First MW. Environmental tobacco smoke measurements retrospect and prospect. *Eur J Respir Dis.* 1984;65(suppl 133):9-16.
- [18.] Fleiss JL. *The Statistical Methods for Rates and Proportions.* 2nd ed. New York, NY: John Wiley & Sons Inc; 1981.
- [19.] Rosnow RL, Rosenthal R. The colunteer subject revisited. *Aust J Psychiatry.* 1976;28:97-108.
- [20.] Borland R, Chapman S, Owne N, et al. Effects of workplace smoking bans on cigarette consumption. *AM J Public Health.* 1990;80:178-180.
- [21.] Repace JL, Lowrey AH. A quantitative estimate of nonsmokers' lung cancer risk from passive smoking. *Environ Int.* 1985;11:3-22.
- [22.] Repace JL, Lowrey, AH. An indoor air quality standard for ambient tobacco smoke based on carcinogenic risk. *N Y State J Med.* 1985;85:381-383.
- [23.] Repace JL. Workplace restrictions on passive smoking: justification on basis of cancer risk. Presented at the APAC Specialty Conference on Combustion Processes and the Quality of the Indoor Environment; September 27-29, 1988; Niagara Falls, NY.
- CAPTIONS: Cigarettes smoked per day and at work by occupation. (table); Current smoking by occupation before and after policy. (graph); Percentage of people actively smoking before and after policy. (table); Average daily cigarette remnant counts before and after policy. (table); Median nicotine vapor concentration by location. (table); Bivariate associations with smoking status: cohort study. (table)

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The worldwide smoking epidemic: tobacco trade, use, and control. (Council on Scientific Affairs)  
JAMA, The Journal of the American Medical Association, v263, n24, p3312(7)  
June 27, 1990

TEXT:

The Worldwide Smoking Epidemic DURING the past two decades, use of tobacco has increased worldwide by almost 75%. [1] In 1986, an estimated 1 billion persons consumed more than 5 trillion cigarettes. [2] Globally, increasing tobacco use is responsible for almost 2.5 million excessive or premature deaths per year--almost 5% of all deaths. [1] International tobacco trade and antitobacco activities are of growing significance for the worldwide smoking epidemic. Activities to restrict the use of tobacco in the United States and Canada, as well as in countries in both Oceania and Western Europe, have produced a declining demand for tobacco and tobacco products in these areas of the world. [3] To maintain and expand markets for their ongoing growth of tobacco leaf and manufactured tobacco products, multinational tobacco conglomerates in the United States, Great Britain, and West Germany, however, have responded by increasingly seeking favorable markets in countries where demand remains or has the potential for becoming high.

The US government, concerned about the contribution of trade deficits to the growing national debt, has cooperated with the US Cigarette Export Association, representing Philip Morris, R. J. Reynolds, and Brown and Williams, a subsidiary of British America Tobacco, to utilize the 1984

amendments of section 301 of the 1974 Trade Act to threaten trade sanctions against countries in Asia where trade agreements, quotas, high tariffs, high retail taxes, and advertising and distribution restrictions have been alleged by the US Cigarette Export Association to limit unfairly the markets to US tobacco products. [4] Increasingly affluent Asian countries with markets recently opened to US cigarette exports include Japan, Taiwan, and South Korea. Growth in cigarette trading in these markets is reflected in the 75% increase in US cigarette exports to Asia during 1988. [5]

Herein, trends in tobacco trading, including amounts and countries of destination, are described. In addition, smoking prevalence rates, worldwide tobacco control activities, and secular trends in lung cancer mortality rates for selected countries are presented. The report concludes with a number of recommendations to restrict the influence of US tobacco trade policies on the world health problems associated with the growing worldwide smoking epidemic.

#### TOBACCO TRADE

International tobacco trade, including US tobacco exports, contributes to the worldwide smoking epidemic through its influence on a large number of factors that in turn alter worldwide demand for tobacco products (Fig 1). United States pressures to open new foreign markets for its tobacco products frequently lead to a number of changes in importing countries: altered trade agreements, increases in tobacco import quotas, lower tariffs on imported tobacco products, and reduced retail taxes on cigarettes. All of these changes potentially lower prices of tobacco products and, where demand (including available disposable income) exists, lead to expansion of distribution sites, consumer changes to American blended cigarettes, and increasing sales and consumption of tobacco products.

In addition, existing or proposed antismoking efforts can be impeded in countries where pressures are applied to open new markets to US tobacco. These efforts include restrictions on sales of cigarettes to minors, restrictions on advertising and promotion, restrictions on places to smoke, public education regarding the harmful effects of tobacco, and health warnings on cigarettes (Fig 1).

Multinational tobacco conglomerates view such activities as unduly restrictive to the distribution of their products. In several countries, including those with centrally controlled economies, cigarette manufacturing businesses are owned by the government, which also is responsible for developing and implementing legislative actions to control smoking. With increased imports and greater competition with domestic cigarettes, there is little impetus to develop or promote antitobacco efforts in these countries. The failure of the US government to require health warnings on cigarette exports removes any competitive incentive for requiring such warnings on domestic cigarettes in countries that import cigarettes manufactured in the United States.

Growing US cigarette exports increase the supply of cigarettes, including the proliferation of new brands, in turn leading to lower cigarette prices (Fig 1). In countries where low per capita consumption of cigarettes is due to lack of disposable income, lower cigarette prices can lead to an increase in tobacco consumption. In addition, the flavor of blended tobaccos used in cigarettes manufactured in the United States frequently is preferred to domestically grown darker or unblended tobaccos (Fig 1), and, in some countries, US cigarettes are considered status symbols. These factors lead to increased competition with domestic cigarettes and more aggressive advertising by US and domestic tobacco manufacturers. Advertising has been reported to target groups with low



tobacco consumption and a potential for an expanding market, such as women and adolescents.

It is important to consider the influence of US government pressures to open new foreign markets independent of US tobacco exports themselves. Multinational tobacco conglomerates in the United States that use the US government to open these new markets also support tobacco growth and control the manufacture of cigarettes in developing and recently developed countries. Once US government trade pressures successfully open new markets, the multinational tobacco conglomerates are free to trade tobacco not only from the United States, but also from other countries in which they have strong tobacco holdings.

International trade in tobacco products is dominated by six multinational tobacco conglomerates, four in the United States and two in Great Britain. [6] In the late 1970s, multinational tobacco conglomerates manufactured 39% of cigarettes; government agencies, 33%; tobacco monopolies in capitalistic countries, 17%; and other tobacco firms, 11%. [6]. However these figures do not consider joint ventures, product licensing agreements, and other subsidiary arrangements of multinational tobacco conglomerates and may underestimate cigarette manufacturing activities by multinational tobacco conglomerates.

#### Worldwide Tobacco Leaf Production

The tobacco industry, ignoring long-term costs of medical care, loss of productivity from tobacco-attributable morbidity and mortality, loss of land use for growth of other crops, and problems of deforestation, including global warming, [7] continues to promote tobacco as an excellent cash crop. Tobacco leaf is grown in at least 120 countries; the major tobacco-growing countries are listed in Table 1. Sixty-three percent of the world's tobacco is produced in developing or recently developed countries. [6] World tobacco leaf production during 1987 was 6.2 million metric tons and is expected to increase by 5% to 6.5 million metric tons in 1988. [5] The major contributor to the expected worldwide increase in leaf production in 1988 is the projected 19% gain in China in 1988. [5]

Since the time of the first commercial cultivation of tobacco in Virginia in the early 1600s, tobacco leaf has been one of the most valuable US exports. [8] Tobaccos are categorized according to type of tobacco (eg, burley and darker tobaccos) and type of curing (eg, air-curing). Before World War II, primarily dark fire-cured and dark air-cured tobaccos were produced. However, domestic and world demand for lighter, flue-cured types of tobacco has increased, [8] and flue-cured light tobaccos and air-cured burley tobaccos constitute 90% of all tobacco grown in the United States.

Production of flue-cured tobacco declined between 1978 and 1986, with a subsequent increase noted in 1987, and a projected gain for 1988. [5] Burley yields during the same period have been more variable, with increases noted for 1987 and forecast again for 1988. [5] The United States has been a leading producer of flue-cured, light tobaccos that have been in demand in international markets. Consequently, half the flue-cured tobacco grown in the United States is exported [5] and the major portion of burley tobacco is produced for domestic use. [5]

#### Worldwide Tobacco Leaf Trade

In 1987, 21% of all tobacco leaf produced in the world was exported. [9] In 1986, the United States was the leading exporter of leaf tobacco (in metric tons) (216 583), followed by Brazil (176 000), Greece (100 864), Italy (91 355), Zimbabwe (90 023), Turkey (81 952), India (61 762), Bulgaria (61 570), and Malawi (57 563). The major importers of tobacco leaf (in metric tons) during the same year were the United States (209 969), Germany (167 899), the United Kingdom (101 214), the Soviet Union (100

000), the Netherlands (79 587), Japan (66 300), and Spain (60 317). [9] In 1986, the unit value (US dollars per kilogram) of both exported and imported tobacco leaf differed markedly among countries: US exports, \$5.65, and imports, \$2.88; Brazil exports, \$2.28; Greece exports, \$3.06; Italy exports, \$1.27; Turkey exports, \$3.30; India exports, \$1.71; Japan exports, \$5.87; Germany imports, \$4.65; United Kingdom imports, \$3.49; the Netherlands imports, \$4.65; and Spain imports, \$4.24. In 1987, the United States exported 195 026 metric tons of tobacco leaf, or approximately 36% of the tobacco produced in this country, and imported 221 202 metric tons of tobacco leaf. [10] In the United States, the value of exported tobacco was approximately two times that of imported tobacco. [10]

Between, October 1987 and May 1988, US tobacco leaf exports were traded to countries in Western Europe (50%), Asia (40%), Africa (7%), Oceania (2%), and Latin America (1%). [5] In 1987, large proportions of US tobacco leaf exports were traded to West Germany, the Netherlands, Spain, Italy, Switzerland, and Japan. [5]

#### Worldwide Cigarette Production

Cigarettes are manufactured worldwide. In 1987, annual US production of 689 billion cigarettes was second only to that of 1441 billion cigarettes produced in China (Fig 2). Worldwide production of cigarettes has been increasing since at least 1970, with a 2.9% increase from 4.97 trillion cigarettes in 1986 to 5.12 trillion in 1987. [11] The 10% increase in production in China from 1986 to 1987 was the major contributor to the worldwide increase in production. [11]

Although US production increased by 6% between 1986 and 1987, production gains in China were much greater. Other countries that reported increases of 3 billion or more cigarettes between 1986 and 1987 were the Soviet Union, Poland, Spain, the Philippines, Mexico, Hong Kong, Bulgaria, and South Korea. [11] While increased production in the United States, Hong Kong, and Bulgaria was in response to increasing exports, that in the other countries were in response to increased domestic consumption. [11]

Total cigarette production in the United States declined from 694 billion cigarettes in 1982 to 650 billion in 1986, followed by an increase in 1987 to 689 billion. [5] An additional increase is projected in 1988 to 705 billion cigarettes. [5] The decrease in production between 1982 and 1986 was the result of a reduction in consumption of cigarettes in the United States, [5] due largely to growing antismoking efforts. The increase in production between 1986 and 1988 is largely in response to increasing US cigarette exports (Fig 3).

#### Worldwide Cigarette Trade

Internationally, cigarette exports declined between 1982 and 1983, followed by steady gains between 1984 and 1987. [11] A similar trend was observed in US exports (Fig 3). The decline for US exports in the early 1980s may in part be attributed to the increasing strength of the US dollar in foreign markets, as well as to declining demand for cigarettes in markets in Western Europe and other industrialized countries. In 1987 the five leading countries to which the United States exported the largest proportions of cigarettes were Japan (32%), Belgium-Luxemburg (23%), Hong Kong (12%), Saudi Arabia (6%), and Singapore (3%). [11]

The proportion of cigarette exported to Japan increased from 16% in 1986 to 32% in 1987. [11] Production of cigarettes in Japan declined steadily between 1983 and 1987, while imports, including those from the United States, increased between 1985 and 1987. [11] In 1987, 30.5 billion cigarettes were imported, a 158% increase over imports in 1986, and 94% of the imported cigarettes were from the United States in 1987. [11] Imports in 1987 represented 10% of the Domestic cigarette market and are projected

to increase to comprise 15% to 20% of the domestic market by 1992. [11] These increases reflect the market responses to the investigation of possible unfair trade conditions conducted by the US government under section 301 of the 1974 US Trade Act. As a result of US government threats of trade sanctions, reflected in a July 1986 letter from a US senator to Yashiro Nakasone, prime minister of Japan (Sen Jesse Helms [R], written communication, July 24, 1986), Japan lowered import tariffs and liberalized pricing, advertising, and distribution restrictions on imported cigarettes. [4]

These changes allowed US manufacturers to reduce the prices of cigarettes sold in Japan by 11% to 21% to a price range of 220 to 240 yen (US dollars, \$1.65 to \$1.80). [11] To remain competitive with imported cigarettes, in 1987 Japan Tobacco Incorporated, now a private corporation, introduced seven new brands of cigarettes in response to growing consumer demand for milder tobacco blends. In addition to growing competition from imported cigarettes, overall demand, as reflected in consumption of cigarettes, declined in Japan from 84% of men in 1966 to 63% in 1986, and from 18% of women in 1966 to 13% in 1986. [12]

In contrast, in Hong Kong, where cigarette imports increased from 9.6 billion in 1986 to 13.7 billion in 1987, production also increased from 13.7 billion cigarettes in 1986 to 17.5 billion in 1987. [11] Following the enactment of the Smoking Ordinance in Hong Kong in 1982, [13] the prevalence of smoking declined to 30.6% in men and 3.8% in women. The observed increase in domestic production in conjunction with increasing imports seems to be in response to growing exports of cigarettes from Hong Kong, primarily to China. [11] Exports to China increased from 5199 million (66% of total exports) in 1983 to 19 146 million (76% of total exports) in 1987. [11]

Recent increases in cigarette imports from the United States by South Korea and Taiwan, both with state-owned tobacco monopolies, also can be attributed to the effects of trade settlements of US investigations under section 301 of the 1974 US Trade Act. Between 1986 and 1987, cigarette imports increased by 1115% in South Korea and by 1015% in Taiwan. [11] In 1987, 75% of the cigarettes imported by Taiwan were from the United States, and domestic production of cigarettes declined by 12%. [11] Cigarette production in South Korea, however, increased by 3.7% from 1986 to 1987, with export of 11.7 million cigarettes to the United States and expectations of future increases in exports to 345 million cigarettes annually to the United States. [11] Between 1986 and 1987, domestic consumption of cigarettes increased by 4.4% in South Korea. [11]

#### WORLDWIDE TRENDS IN SMOKING PREVALENCE

Although the prevalence of smoking is declining in economically developed countries, increasing numbers of people are smoking in developing countries, particularly in Southeast Asia, Latin America, and Africa. [3] Observations of secular changes in smoking patterns with economical development in countries such as the United States and Canada, as well as in countries in Oceania and Western Europe, indicate that smoking rates initially increase with advancing socioeconomic development and increasing levels of disposable income, but subsequently decline with improvements in education and increasing antismoking efforts. In countries where smoking is traditionally common among men prior to economic development, the initial change with advancing socioeconomic development and with growing competition in the cigarette market is greater demand for cigarettes, followed by initiation of smoking by additional numbers of women and adolescents. However, as educational levels and antismoking activities

increase, per capita tobacco consumption and smoking rates decline, first in men and then in women.

These trends in smoking prevalence are evident in the data presented for selected countries in Figs 4 through 6. The quality of these data could be improved, and the World Health Organization recently developed guidelines to increase standardization of smoking survey data. [13]

With regard to tobacco use in children, it has been estimated that worldwide as many as 200 million children currently younger than 20 years will subsequently die from tobacco use. [14] In 14 economically developed countries with long-standing antismoking activities, and for which smoking prevalence time trend data are available (from 1971 to 1985), smoking rates declined in boys in all 14 countries. [15] In contrast, smoking rates in young girls declined in only 9 of 14 countries (Belgium, Denmark, Federal Republic of Germany, the Netherlands, Finland, Norway, Sweden, the United Kingdom, and the United States) and increased in 5 countries (Australia, Canada, France, Democratic Republic of Germany, and New Zealand). [15]

In general, in developing countries, smoking is common among adolescent boys and, primarily because of cultural influences, is less common among adolescent girls. [15] However, in some countries in Southeast Asia and the Eastern Mediterranean, such as Nepal, Iran, Israel, Lebanon, and Tunisia, the prevalence of smoking is high in girls and boys. [15]

#### WORLDWIDE

##### ANTISMOKING ACTIVITIES

Efforts to control smoking include legislative and health education activities. Information on worldwide legislation to control smoking has been gathered through mid-1986. [15,17] This information, regarding advertising bans, health warnings, package information indicating levels of nicotine, tar, and carbon monoxide, and smoking in public places and workplaces, is summarized in Table 2.

Banning cigarette advertising is a significant and common type of antitobacco legislation. By mid-1986, fifty-five countries had enacted legislation to control advertising--20 with total bans, 15 with strong partial bans, and 20 (including the United States) with moderate bans. Countries in Europe (Table 2) reported the strongest bans on advertising. However, advertising bans are not enforced uniformly in all countries. Three leading tobacco-producing countries--Brazil, Greece, and Turkey--reported no advertising bans.

By mid-1986, fifty-two countries required health warnings on cigarettes. Only 6 countries (Australia, Finland, Iceland, Ireland, Norway, the United Kingdom, and the United States), however, had recognized the effectiveness of and required rotating warnings, as used in the Swedish system. [18,19] Far fewer countries, [20] excluding the United States, [16] required statements on cigarette packages regarding nicotine, tar, and carbon monoxide levels. forty-seven countries reported some legislation to control smoking in public places, and 11 countries had legislation that limited smoking in the workplace.

#### SECULAR TRENDS IN LUNG

##### CANCER MORTALITY

While tobacco use increases risk for mortality from a number of diseases, the smoking-attributable risk [21] for lung cancer is highest. In populations, a 20-year lag occurs between the time of changes in smoking prevalence and observations of changes in lung cancer mortality rates. Other significant issues to be considered in interpreting secular trends in country-specific lung cancer mortality rates include changes in mortality rates from competing causes of death, other possible exposures manifested as population cohort effects, changes in age distributions of the

populations over time, and changes in accuracy of diagnosis.

Worldwide, lung cancer is increasing rapidly. In 1975, 600 000 new cases of lung cancer were reported [22]; it is estimated that lung cancer deaths worldwide may increase to 2 million by the year 2000. [8] The most important contribution to age-specific increases in lung cancer rates is the increasing numbers of cigarette smokers. [23]

In Japan for the period 1950 to 1985 the lung cancer mortality rate increased from 2.7 deaths per 100 000 in 1950 to 20.2 deaths per 100 000 in 1979. [24] Sex-specific lung cancer mortality rates (per 100 000 population) increased from 11.2 in men and 4.6 in women in 1965 to 35.3 in men and 12.7 in women in 1985 (Fig 7). Further increases in lung cancer mortality can be expected given increasing per capita consumption of cigarettes from 1220 in 1950 to 3468 in 1979. [24] During this same period, similar increases were noted in men and women in Hong Kong (Fig 7). In areas of the world where tobacco use is increasing, comparable future increases in lung cancer mortality, as well as morbidity and mortality from other tobacco-associated diseases, can be expected.

#### RECOMMENDATIONS

The Council on Scientific Affairs recommends that the American Medical Association take the following actions:

1. Urge the US government to alter trade policies and practices that currently serve to promote the world smoking epidemic.
2. Continue the activities recommended in resolution 185, A-88 to
  - \* support federal legislation that requires health warning labels in the appropriate native language or symbolic form to be on packages of cigarettes exported and require foreign advertising by the US tobacco producers to be at least as restrictive as types of advertising permitted in the United States;
  - \* encourage labeling on tobacco products manufactured abroad to be at least as restrictive as those that are produced in the United States;
  - \* oppose efforts by the US government to persuade countries to relax regulations concerning tobacco promotion and consumption;
  - \* and urge the World Health Organization to increase its worldwide anti-smoking efforts.
3. Work with the World Medical Association as well as directly with national medical societies to expand activities by the medical profession to reduce tobacco use worldwide.
4. Establish close working relations with the World Health Organization to promote more physician involvement in antitobacco activities, particularly in developing and recently developed countries.
5. Work with the Centers for Disease Control's Office on Smoking and Health to promote worldwide antitobacco activities.
6. Periodically monitor the success of worldwide antitobacco efforts to control the growing worldwide smoking epidemic.

#### References

- [1.] Chandler W. Wordwatch Paper 68: Banishing Tobacco. Washington, DC: Wordwatch Institute; 1986.
- [2.] Taylor P. The Smoke Ring: Tobacco, Money and Multinational Politics. New York, NY: New American Library; 1985.
- [3.] Masironi R, Rothwell K. Worldwide smoking trends. In: Aoki M, Hisamichi S, Tominaga S, eds. Smoking and health 1987: Proceedings of the 6th World Conference on Smoking and Health. New York, NY: Elsevier Science Publishing Co Inc; 1988:47-51.
- [4.] Connolly GN. Tobacco and United States trade sanctions. In: Aoki M, Hisamichi S, Tominaga S, eds. Smoking and Health 1987: Proceedings of the 6th World Conference on Smoking and Health. New York, NY: Elsevier

Science Publishing Co Inc; 1988:351-354.

[5.] Tobacco: Situation and Outlook Report. Washington, DC: Economic Research Service, US Dept of Agriculture; 1988. Report TS-203.

[6.] Nath UR. Smoking: Third World Alert. New York, NY: Oxford University Press; 1986.

[7.] Booth W. Johnny Appleseed and the greenhouse. Science. 1988;242:19-20.

[8.] International Agency for Research on Cancer. Tobacco Smoking. Lyons, France: World Health Organization; 1986;38.

[9.] World Tobacco Situation. Washington, DC: Foreign Agricultural Service, US Dept of Agriculture; 1987. Report FT 10-87.

[10.] World Tobacco Situation. Washington, DC: Foreign Agricultural Service, US Dept of Agriculture; 1988. Report FT6-88.

[11.] World Tobacco Situation. Washington, DC: Foreign Agricultural Service, US Dept of Agriculture; 1988. Report FT8-88.

[12.] Shimao T. Smoking and its control in Japan. In: Aoki M, Hisamichi S, Tominaga S, eds. Smoking and Health 1987: Proceedings of the 6th World Conference on Smoking and Health, New York, NY: Elsevier Science Publishing Co Inc; 1988:53-60.

[13.] Mackay JM, Barnes GT. Effects of strong government measures against tobacco in Hong Kong. World Smoking Health. 1987;12:10-28.

[14.] Mackay J. Battlefield for the tobacco war. JAMA. 1989;261:28-29.

[15.] Geizerova H, Masironi R. Cigarette smoking in children and adolescents: worldview. In: Aoki M, Hisamichi S, Tominaga S, eds. Smoking and Health 1987: Proceedings of the 6th World Conference on Smoking and Health. New York, NY: Elsevier Science Publishing Co Inc; 1988:601-605.

[16.] Roemer R. Legislative Action to Combat the World Smoking Epidemic. Geneva, Switzerland: World Health Organization; 1983. HWO/695.

[17.] Roemer R. Recent Development in Legislation to Combat the World Smoking Epidemic. Geneva, Switzerland: World Health Organization; 1986. WHO/SMO/HCE/861.

[18.] Staff Report on Cigarette Advertising Investigation. Washington, DC: Federal Trade Commission; 1981. Public version.

[19.] Ramstrom LM. Legislation in Sweden. In: The Smoking Epidemic, a Matter of Worldwide Concern. Stockholm, Sweden: Almquist & Wiksell International; 1980:27-277.

[20.] Chapman S. Cigarette Advertising and Smoking: A Review of the Evidence. London, England: British Medical Association; 1985.

[21.] Reducing the Health Consequences of smoking: 25 Years of Progress; A Report of the Surgeon General. Washington, DC: US Dept of Health and Human Services; 1989. Publication (CDC) 89-8411.

[22.] Parkin M, Stjernsward J, Muir C. Estimates of the worldwide frequency of twelve major cancers. Bull WHO. 1984;62:163-182.

[23.] Doll R, Peto R. The cause of cancer: quantitative estimates of avoidable risks of cancer in the United States today. JNCI. 1981;66:1191-1300.

[24.] Kristein MM. Japanese lung cancer mortality rates, 1947-80, and per capita cigarette consumption in Japan. Int J Epidemiol. 1986;15:140-141.

CAPTIONS: Worldwide demand for cigarettes. (diagram); World tobacco leaf production, 1987 to 1988. (table); Worldwide cigarette production, by country. (graph); US cigarette exports, 1979 to 1987. (graph); Percent of smokers in selected countries. (graph); Percent of smokers in selected areas of the world. (graph); Worldwide antitobacco activities. (table)

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The impact of a total ban on smoking in the Johns Hopkins Children's Center.

Becker, Diane M.; Conner, Harry F.; Waranch, H. Richard; Stillman, Frances; Pennington, Linda; Lees, Peter S.J.; Oski, Frank  
JAMA, The Journal of the American Medical Association, v262, n6, p799(4)  
August 11, 1989

**TEXT:**

AS IN MANY hospitals, over the past five decades, smoking at The Johns Hopkins Medical Institutions has become progressively more relaxed, with visible smoking occurring in most public areas. Cigarette smoking, however, has become inconsistent with the health protection activities of hospitals and the expectations of patients. [n1] Despite the fact that smoking-related diseases constitute a major proportion of hospital admissions, only a few hospitals have become totally smoke free. [n2,n3] A survey of 774 college-affiliated hospitals in 1988 showed that less than 8% were totally smoke free. [n4] In 1987, The Mayo Medical Center, Rochester, Minn, implemented a ban on smoking and joined only a handful of other large teaching hospitals with smoke-free environments. [n5] This article offers a rigorous empirical evaluation of the first phase of the new no smoking policy in all departments and divisions of The Johns Hopkins Medical Institutions: the total ban on smoking in The Johns Hopkins Children's Medical and Surgical Center, a self-contained pediatric hospital within the institutions. Attitudes toward smoking, self-reported smoking, systematic observations of smoking behavior, and measures of environmental tobacco smoke exposure in the Children's Center inpatient hospital and clinics were determined before and after implementation of a total smoke-free policy.

**BACKGROUND**

In December 1986, a decision was made by the chief of pediatrics and an administrative committee of The Johns Hopkins Children's Medical and Surgical Center to ban smoking in all areas of the 200-bed acute-care hospital and clinics, which process 91 000 pediatric outpatient visits per year. The policy at that time limited smoking to designated lounges on two of the eight inpatient units. However, there was marked non-compliance among both visitors and staff, with highly visible smoking occurring throughout the center. A 6-month program was instituted on January 1, 1987, to prepare employees and the environment for a total smoking ban, effective July 1, 1987. This was to become the first phase of a project to ban smoking throughout the institutions. An employee policy advisory committee assisted in implementation, commencing with an awareness-arousing survey of smoking behavior and attitudes of employees in January 1987. The ensuing campaign produced newsletters that defined the policy and provided information on smoking cessation alternatives. "Health Awareness Days" included free cholesterol, blood pressure, and pulmonary function screening, measurement of exhaled carbon monoxide, computerized health risk appraisal, and on-site health counseling. A media campaign in both the center and the local press highlighted the policy. In June 1987 and thereafter, policy cards summarizing the no smoking policy were given to all parents in the admitting office. In June and July 1987, a lunchtime

booth offered smoking cessation advice, T-shirts and buttons, and self-help quit smoking materials. Finally, July 1, 1987, the first day of the ban, was marked by a press conference, placement of highly visible no smoking signs, and the dissemination of "quit kits" for parents of children in the center. Public awareness activities remained in place for 3 more months.

#### METHODS

##### Survey

The personnel payroll roster was used to identify the 951 full- and part-time employees in all functional units of the center and clinics. Six months before the ban surveys were distributed directly on the functional units, and sealed, completed questionnaires were returned to an immediate supervisor. Confidentiality was assured. Non responders were given a second survey using the same methods 1 month after the first survey. One year after the first survey and 6 months after the ban, the survey was distributed again using the same two-wave approach. Both surveys were cross-sectional and elicited attitudes toward smoking and the ban as well as self-reported smoking behavior.

##### Smoking Observations

Unobtrusive observations were made of active smoking in visitor lounges adjacent to patient units in the acute-care hospital and in six waiting areas in the clinics for 15-minute periods at randomly sampled times from 10 AM to 6 PM. Observation times were similar before and after the ban, with each hour sampled approximately equally. Data were recorded on a standardized 8 1/2 X 11-in single-page form. All observations were taken by personnel unknown to employees and visitors of the center. The data collection procedure was masked by having the observers dress casually and by obscuring the data collection instrument in a magazine or book. Information was collected on the total number of people in the area and on the number of people who were actively smoking cigarettes by gender and visitor or staff status. Observations were carried out on 59 occasions in May and June 1987, just before the ban on smoking, and on 48 occasions in December 1987, six months after the ban was instituted. Continuation of these labor-intensive observations beyond 48 was deemed unjustified after the ban because of consistent failure to observe any smoking. To determine the accuracy of observer recording, two observers were assigned the same area at the same time on 10% of observation occasions, and interrater concordance was determined to be almost 100%.

##### Cigarette Butt Counts

By law, permanent wall-mounted ashtrays remained in place outside the 21 center and clinic elevator doors on 10 floors before and after the ban. This allowed counting of the number of cigarette butts placed in these receptacles, which were located well within the boundaries of the center. Following the ban, all elevator ashtrays were labeled with signs stating that ashtrays were required by law, that smoking was prohibited, and that the existence of ashtrays did not represent an invitation to smoke. Four hourly counts of cigarette butts during visiting and clinic hours were made from noon to 4 PM, and overnight counts were made from 4 PM to noon at all elevator sites on three weekdays and one weekend day 2 weeks prior to the ban (June 1987), 2 weeks after the ban (July 1987), and 6 months after the ban (December 1987). Ashtrays were cleaned and vacuumed after each butt count.

##### Environmental Nicotine Vapor Concentrations

Passive diffusion nicotine monitors were placed for 7 days in randomly selected elevator lobby lounge areas, conference rooms, staff lounges, patient rooms, and restrooms before the ban in June 1987 and in the same locations 6 months after implementation of the ban. The passive



diffusion monitor consisted of a 37-mm diameter polystyrene cassette containing a Teflon-coated glass fiber filter that was treated with a 4% sodium bisulfate solution suspended inobtrusively 6 in from the ceiling. In this method, airborne nicotine vapor diffuses to the treated filter where it is adsorbed and retained for later analysis by gas chromatography. [n6] This method has been validated over a wide range of environmental nicotine concentrations shown to result from tobacco smoke. The center's buildings have one-pass air-circulating systems that were maintained at a specified and consistent temperature and humidity range, with no changes in airflow over the course of the study. Given the stability of the airflow system, potential changes in temperature or humidity during the two observation periods were too small to result in appreciable effects on nicotine vapor concentration.

## RESULTS

### Smoking Prevalence and Attitudes

A final response rate of 79% was achieved on the first survey 6 months before the ban; a 74% response rate was achieved on the second survey 6 months after the ban. No statistically significant differences were observed in any respondent characteristic before and after the ban (Table 1).

Table 1. — Characteristics of Survey Respondents

[TABULAR DATA OMITTED]

Overall self-reported changes in current smoking prevalence were small. Six months before the ban, 115 (15%) of 762 respondents reported being current smokers, 161 (21.3%) former smokers, and 481 (63.5%) never smokers; eight people did not indicate smoking status. Six months after the smoking ban, 95 (13.8%) of 704 respondents reported being current smokers, 189 (27.6%) former smokers, and 402 (58.6%) never smokers; 18 people did not indicate smoking status. Among the 189 former smokers, 13% indicated they had quit in the past year since the baseline survey.

The prevalence of current smoking was highest in both the baseline and follow-surveys before and after the ban among housekeeping/kitchen employees (Figure). Clerical employees also retained a high smoking prevalence in both surveys. Changes in smoking status by occupation were not significant for any group. There were no gender differences in current smoking; 16% of men and 15% of women smoked 6 months before the ban; 12% of men and 14% of women smoked at follow-up. Age was associated with current smoking status in both surveys: 23% of 41- to 50-year-old employees smoked more than the 14% observed in all other age groups ([chi.sup.2] = 4, 1 df, P = .04). Smoking prevalence at follow-up was 31% among high school graduates, 12% among college graduates, 6% among masters-educated employees, and 4% among employees with doctorates. This did not differ significantly from the baseline survey. [n7]

The average number of cigarettes smoked per day was 15 +/- 11 prior to the ban and 15 +/- 9 six months after the ban. Six months before the ban 82% of smokers reported smoking during the work shift, with 16% smoking 10 cigarettes or more during a shift. The average number of cigarettes smoked at work, however, was 5.8 +/- 5.6. Six months after the ban, only 43% of smokers reported smoking at work, with 45% smoking 10 cigarettes or more during a shift. The average number of cigarettes smoked at work after the ban was 5.1 +/- 4.8. Because most employees rotated shifts, it was not possible to differentiate smoking frequency by time of day. The majority of work-site smoking (90%) occurred on or adjacent to the patient units and in adjacent offices before the ban; after the ban, 88% indicated that they smoked away from patient areas. The remaining 12% of employees did not indicate where they smoked at work after the ban.

Table 2 summarizes the agreement of employees with a series of statements about smoking. Attitudes of never smokers and former smokers were similar at baseline and at follow-up, with no significant differences occurring for any attitude statement on either survey.

Table 2. — Agreement With Smoking Attitude Statements by Smoking Status 6 Months Before and After the Ban on Smoking

[TABULAR DATA OMITTED]

Smoking Observations and Cigarette Butt Counts

Table 3 summarizes the observations of smoking on all units before and after the ban. In a total observation time of 885 minutes 2 weeks before the smoking ban, 53% of visitors and staff were observed smoking. In 720 minutes of observations 6 months after the ban, no visitors or staff were observed smoking. The absolute number of visitors using the lounges fell by 64% following the ban while the number of staff occupying lounges increased by 295% when adjusted for a shorter observation period following the ban. In the outpatient clinics, no smoking was observed in any areas in the 2 months before or 6 months after the ban.

Table 3. — Smoking Observations in Visitor Lounges Before and 6 Months After the Ban on Smoking

[TABULAR DATA OMITTED]

Table 4 summarizes the cigarette butt counts 2 weeks before and 6 months after ban. There was a preban-postban 84-fold overall decrease in the number of cigarette butts during the day and a 44-fold decrease in overnight counts. The counts remained approximately the same 2 weeks and 6 months after the ban.

Table 4. — Average Cigarette Butt Counts Before and After the Ban on Smoking

[TABULAR DATA OMITTED]

Environmental Nicotine Vapor Concentrations

Table 5 summarizes the changes in nicotine vapor concentration in air as measured 1 month before and 6 months after the ban. A marked decrement in concentration was observed in elevator lobby lounge areas, while no significant changes were noted for the remaining areas, which had lower baseline concentrations.

Table 5. — Average Nicotine Vapor Concentrations Before and After the Ban on Smoking

[TABULAR DATA OMITTED]

COMMENT

Smoking Behavior

Although some employees reported quitting smoking after the ban, there was no significant difference in the total prevalence of smoking or in the average number of cigarettes smoked per day. These findings are congruent with other studies that suggest a smoking ban alone will not result in a significant decrement in overall prevalence of smoking among employees. [n8,n9] Other studies suggest, however, that smoking prevalence among employees after a ban decreases steadily over time and that a 6-month observation period after implementation of a ban might not be long enough to determine the full impact of the ban on prevalence. [n10] Although many smokers prior to the ban believed that the ban would help them stop smoking completely, this did not seem to be the case. The findings suggest, however, that most smokers attempted to comply with the ban either by not smoking at work at all or by smoking away from the center during work hours.

Attitudes

Consistent with other studies, this study shows that significantly more employees favored the total ban on smoking 6 months after

implementation. [n8-n11] After the ban, even the majority of smokers agreed that a hospital should be smoke free. There was no increase in the number of smoking employees who would ask visitors to extinguish cigarettes, but nonsmokers significantly increased their expressed willingness to play this role in enforcement. A marked increase occurred in the number of both smokers and nonsmokers who agreed that a smoking ban is "unfair" to smokers. This might seem to contradict the support of the ban. However, it is possible to hold the view that a ban is correct for the hospital but that smokers might experience difficulties as a result of imposition of the ban. It might be posited that both smokers and nonsmokers became sensitized to the personal hardships endured by smokers after the ban, particularly since the survey occurred in the winter months when many smokers had to cluster outside in the cold weather to have a cigarette. The lack of specificity of the term "unfair" makes this item difficult to interpret. The finding was unexpected and the survey did not contain more discriminatory items to sort out this issue.

#### Smoking Observations

There clearly was a marked reduction in visible smoking in public lounges. This finding also is consistent with the few prior studies that have used systematic observations as a smoking policy evaluation tool in the hospital setting. [n12,n13] The number of visitors using these lounges, which were located immediately outside of the patient units, declined dramatically. Before the ban, these lounges were occupied almost totally by smoking parents and their inpatient children. Their notable absence from the lounges after the ban suggests that pediatric patients were brought to this area while parents smoked and that parents now seem more likely to remain at the bedside of the child or in the unit playrooms. Increased use of these lounges by staff members simply might reflect the availability of nonsmoking lounge seating that was absent before the ban.

#### Cigarette Butt Counts

The elevator ashtrays were located well within the center. Any cigarette extinguished therein represented smoking in the center. The reduction in these counts was marked. There were no other designated ashtrays in the center after the ban, no makeshift or unauthorized ashtrays appeared, and cigarettes were not observed extinguished on the floors or other areas. It remains possible that commodes or sinks in the lavatories could have been used, but nicotine vapor concentrations in these areas suggest that this did not occur.

#### Environmental Nicotine Vapor Concentrations

This technique has not been used in the evaluation of a ban on hospital smoking in prior studies. It was selected because of reliability and specificity. There was a definite reduction in this proxy measure of environmental tobacco smoke. Prior studies that have examined air quality in relation to a ban have relied on subjective reporting by employees of perceived air quality and environmental smoke exposure or have measured the distribution of respiratory particulates, which is a more problematic measure. [n9,n11,n14] All these studies suggest improved air quality, either perceived or measured, following a smoking ban.

#### Conclusions

This study demonstrates that although smoking prevalence did not decrease significantly, employees were generally compliant with the ban. There were no grievances filed with the bargaining unit, no acrimonious confrontations with either staff or visitors, and no formal resistance. Despite the fact that some smoking continued in the center, it is clear that the total ban on smoking, implemented with an emphasis on health and prevention, resulted in a hospital environment that appropriately supports

the tenets of disease prevention and health protection.

From the Departments of Medicine (Drs Becker and Stillman), Preventive Medicine Program (Dr Conner and Ms Pennington), Psychiatry (Dr Waranch), Environmental Health Sciences (Dr Lees), and Pediatrics (Dr Oski), The Johns Hopkins Medical Institutions, Baltimore, Md.

Reprint requests to Preventive Cardiology Programs, Division of Internal Medicine, 1830 E Monument St Bldg, 8th Floor, The Johns Hopkins Hospital, Baltimore, MD 21205 (Dr Becker).

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#### REFERENCES:

- [n1.] Kottke TA, Hill C, Heitzig C, et al. Smoke-free hospitals: attitudes of patients, employees and faculty. *Minn Med.* 1985;64:53-55.
- [n2.] Andrews JL. Reducing smoking in the hospital: an effective model program. *Chest.* 1983;84:206-209.
- [n3.] Welty TK, Tanaka ES, Leonard B, et al. Indian Health Service facilities become smoke free. *JAMA.* 1987;258:185.
- [n4.] American College of Health Care Executives. Smoking policy survey results. Read before the Congress on Administration; February 13-17, 1988; Chicago, Ill.
- [n5.] Hurt RD, Berge KG, Offord KP, et al. The making of a smoke-free medical center. *JAMA.* 1989;261:95-97.
- [n6.] Hammond SK, Leaderer BP. A diffusion monitor to measure exposure to passive smoking. *Environ Sci Technol.* 1987;21:494-497.
- [n7.] Becker DM, Conner HF, Waranch HR, et al. Banning smoking in a children's hospital: are employees supportive? *Prev Med.* 1989;18:72-78.
- [n8.] Rigotti NA, Hill P, Cleary P, et al. The impact of banning smoking on a hospital ward: acceptance compliance, air quality, and smoking behavior. *Clin Res.* 1986;34:833. Abstract.
- [n9.] Rosenstock IM, Sterogachis A, Heaney C. Evaluation of smoking prohibition policy in a health maintenance organization. *Am J Public Health.* 1986;76:1014-1015.
- [n10.] Petersen LR, Helgeson SD, Gibbons CM, et al. Employee smoking behavior changes and attitudes following a restrictive policy on worksite smoking in a large company. *Public Health Rep.* 1988;103:115-120.
- [n11.] Biener L, Abrams DB, Follick MJ, et al. Effects of a restrictive smoking policy on hospital employees. Read before The Society of Behavioral Medicine; March 1986; San Francisco, Calif.
- [n12.] Dawley HH, Baldwin J. The control of smoking: smoking rate in designated smoking and nonsmoking areas. *Int J Addict.* 1983;18:1033-1038.
- [n13.] Dawley HH, Burton MC. Smoking control in a hospital setting. *Addict Behav.* 1985;10:351-355.
- [n14.] Bearg DW. 1984 Follow-up Study of Measurements of Respirable Particulates Generated From Tobacco Smoke in the New England Baptist Hospital. Life Energy Associates; 1986.

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Great American Smokeout: the business perspective - Merck's all-out  
smoke-free program adds momentum to business trend.  
PR Newswire, 1115NY058

Nov 15, 1989

TEXT:

**GREAT AMERICAN SMOKEOUT: THE BUSINESS PERSPECTIVE --  
MERCK'S ALL-OUT SMOKE-FREE PROGRAM ADDS MOMENTUM TO BUSINESS TREND**

RAHWAY, N.J., Nov. 15 /PRNewswire/ -- A survey published last month shows that 79 percent of all American corporations now restrict smoking, as compared with 50 percent in 1987. More than 20 percent of those with smoking policies ban smoking throughout every building. Approximately 6 percent are smoke-free everywhere on their property.

Merck & Co., Inc. is one of the firms that have implemented a comprehensive smoke-free program. Voted "America's Most Admired Company" for the last three years in an annual Fortune magazine poll of business leaders and financial analysts, the Rahway-based pharmaceutical corporation severely restricts smoking not only on its 24 sites in the United States, but also at off-site events it sponsors.

Merck is also going all-out to encourage smokers to quit. The company:

- Reimburses employees and their dependents for successful completion of approved smoking cessation programs. (More than 400 Merck employees have enrolled to date.)
- Waged a year-long employee communications program, conceived with the help of top communications experts, encouraging smokers to quit.
- Helps fund the American Lung Association's Freedom From Smoking Clinic at a Rahway hospital.
- Has just given \$20,000 each to the American Cancer Society and the American Lung Association in support of public education no-smoking programs.
- Produced an antismoking commercial aired repeatedly on 14 commercial radio stations serving communities surrounding Merck sites nationwide.

A comprehensive smoking policy survey of U.S. industry has been conducted annually since 1987 by the Hay/Huggins division of The Hay Group, a management consultant firm based in Philadelphia. According to Michael Carter, the senior vice president in charge of the survey, the larger the company, the more likely it is to have a smoking policy.

He reports that 81 percent of surveyed firms with annual revenues of \$1 billion or more restrict smoking, compared with 75 percent of companies in the \$300 million-\$1 billion bracket and 65 percent of those grossing less than \$300 million a year. Merck's 1988 sales of \$5.9 billion led the worldwide pharmaceutical industry.

Of firms with smoking policies, says Carter:

- 12 percent offer employees the opportunity to request a smoke-free workplace.
  - 31 percent generally allow smoking but have designated no-smoking areas.
  - 41 percent are largely smoke-free with designated smoking areas.
  - 22 percent prohibit smoking throughout all buildings.
- (The figures total more than 100 percent because of overlap between the first and second categories.)

Comparison of the latest figures with those from a 1985 survey of Fortune 1,000 companies and Inc. magazine's 100 fastest growing companies shows how far U.S. industry has traveled toward a smoke-free environment in four years.

Conducted by the Human Resources Policy Corporation, the 1985 poll drew responses from 445 firms. Fewer than a third said they had formal

policies on smoking. Prevalence of smoking varied widely by industry: 57.1 percent of pharmaceutical companies had smoking policies, compared with only 11.1 percent of mining/petroleum/refining companies.

Most of the responding firms said they had implemented smoking policies for safety reasons, without considering employee health, cost savings, profit increases or employee morale.

A spokesperson for Merck said the company instituted its program because it is "committed to the improvement of human health" and because it has "a responsibility to provide a safe and healthy work place for all its employees."

-0- 11/15/89 /CONTACT: Sharyn Bearse, 201-594-7966, or home: 201-335-8973, or John Doorley, 201-594-4081, or home: 201-232-2052, both of Merck/

(MRK) CO: Merck & Co., Inc. ST: New Jersey IN: HEA JS

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03185940

SLANTS AND TRENDS: SMOKING BANS -

Occupational Health &amp; Safety Letter May 13, 1996 V. 26 NO. 10

ISSN: 0196-058X

PUBLISHER: Business Publishers, Inc

Permitting workplace smoking can cost employers more than medical bills by increasing housekeeping and ventilation costs, and by requiring more frequent replacement of furniture and computers, say researchers who conducted a national survey on the impact of a smoking ban. The researchers, writing in the April 24 issue of the Journal of the American Medical Association (JAMA), said, "Considering the enormous toll of smoking and sustained smoking prevalence rates (about 25 percent of the U.S. adult population smokes), new tobacco control strategies are needed." The researchers said workplace smoking restrictions reduce overall tobacco use. The study also cited additional research estimating that employing a smoker costs companies \$624 per year on average more than employing a non-smoker.

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Policy - Cancer Prevention

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PUBLISHER: CW Henderson, Publisher

Bal, D.G.; Lloyd, J. "Advocacy and Government Action for Cancer Prevention in Older Persons." Cancer, October 1, 1994;74(7 Suppl.):2067-2070.

According to the authors' abstract of an article published in Cancer, "Government action and the advocacy activities that influence it are as important a concern for cancer control as they are for any other public issue. Policy advocacy strategies have proven themselves effective in cancer prevention efforts involving tobacco use and nutrition. Much of what has been learned from this experience can be applied with great effect in advocacy efforts for other cancer control measures. The implementation of Proposition 99, the 1988 tobacco tax initiative in California, illustrates the effectiveness of aggressive policy advocacy strategies such as provocative paid advertising, mobilization through coalitions, and community -level public relations, to bring about government action at all levels of government and in the private sector. Today, largely as a result of these activities, more than 70 of California's 471 cities have a 100%

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smokefree workplace and/or a 100% smokefree restaurant ordinance, and nearly 300 cities currently have ordinances that restrict smoking pollution and/or restrict youth access to cigarette vending machines. About 150 cities have ordinances that were either adopted or greatly strengthened since 1990 when the program hit the streets. Ironically, although the primary aim of these strategies has been to reduce uptake of tobacco use by adolescents, the program's gains so far-including the reduction in adult smoking prevalence from 26% in 1988 to 20% in 1993, for an estimated savings in 1993 alone of \$386 million in direct medical costs in the state-have been the result of adult smokers quitting, especially those older than 50." The corresponding author for this study is: DG Bal, Calif Dept Hlth Serv, Canc Control Branch, 601 N 7TH St, MS 662, POB 94234732, Sacramento, CA 94234 USA. For subscription information for this journal contact the publisher: J B Lippincott Co, 227 East Washington Square, Philadelphia, PA 19106.

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